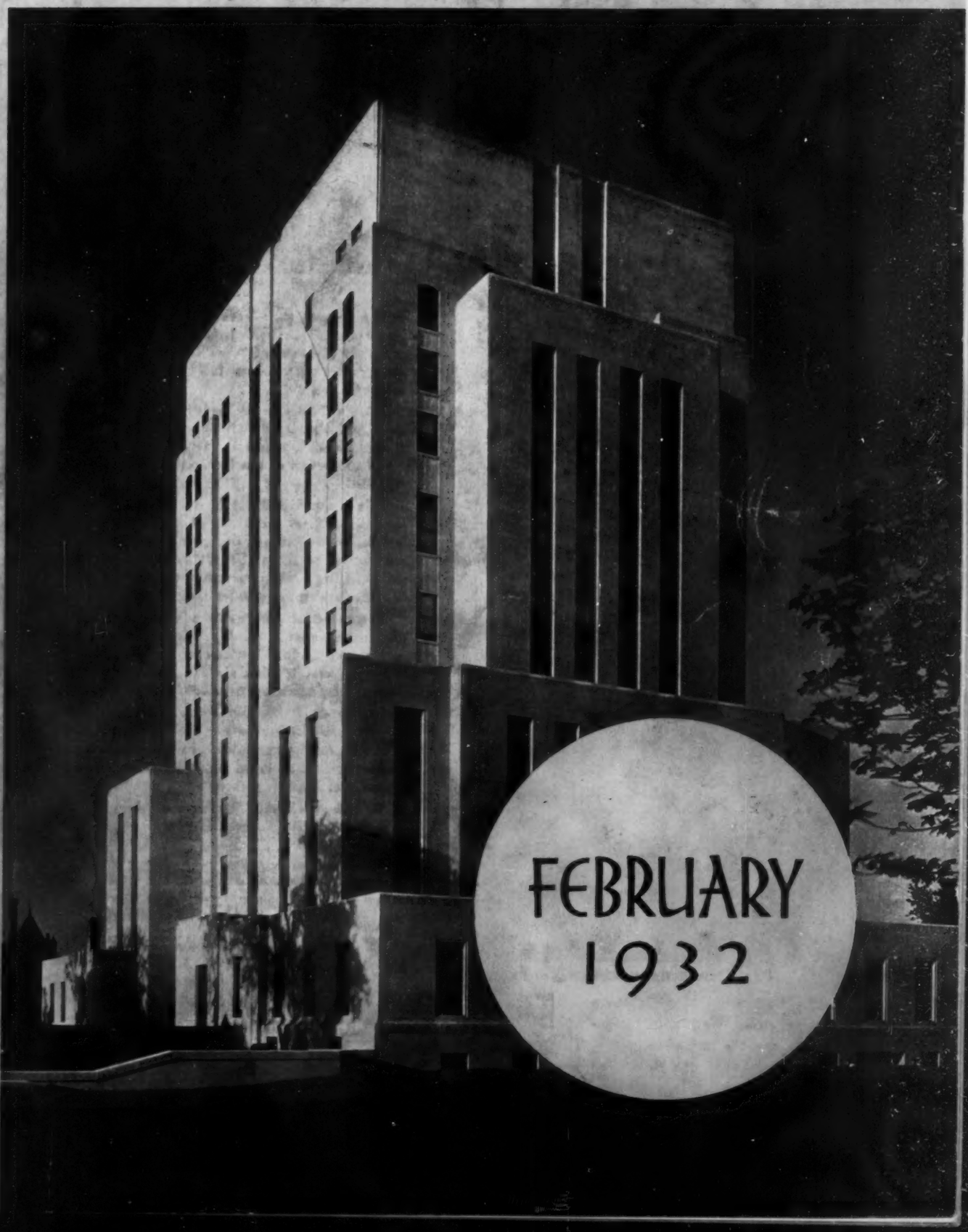
Architecture
Library

FEB 19 1932

THE ARCHITECTURAL RECORD



FEBRUARY
1932

ASK YOUR DOCTOR

about the hygienic principles upon which this new system of ventilation is based

Minimizes drafts, overheating, and odors

In recent years, the science of ventilation has been placed upon a sound physiological basis; hygienists know that effective ventilation is largely a matter of "sensible temperature," consisting of: 1. proper room temperature. 2. Proper relative humidity. 3. Proper atmospheric activity.

To control these factors has been the problem of ventilation engineers, and after many years of study, research and practical experiment, *positive control* has been accomplished. It has come with the development of the Herman Nelson Her-Nel-Co System of Ventilation.

This system is different from all others. Through its method of operation, it automatically maintains proper indoor atmospheric conditions at all times. Air activity, humidity and temperature are under constant control. Thus, the Herman Nelson System creates a healthful, invigorating atmosphere throughout the entire room. Pupils and teachers are safeguarded against drafts, overheating and odors.

In contrast with other mechanical systems, but in keeping with the most advanced hygienic principles, the Her-Nel-Co System does not involve the introduction of a continuous supply of outdoor air into the room. Outdoor air is utilized only when required, and in the quantity necessary, to remove excess body heat.

Leading architects, physicians and heating engineers endorse the principles underlying the Her-Nel-Co System of Ventilation. The fact that this system introduces new economies in building and maintenance costs is an added feature which school authorities appreciate.

Write for the book, "The Herman Nelson Her-Nel-Co System of Ventilation." The Herman Nelson Corporation, Moline, Illinois.

HERMAN NELSON
Her-Nel-Co
SYSTEM OF VENTILATION

Manufactured by the originators and pioneers of Univent Ventilation, the Her-Nel-Co System of Ventilation, the Invisible Radiator, and other heating and ventilating innovations that have received world-wide recognition.

Factory at Moline, Ill. Sales and service offices in principal cities

Belfast	Scranton	Cincinnati	Detroit	Omaha	Vancouver
Portland, Me.	Philadelphia	Toledo	Milwaukee	Emporia	Winnipeg
Boston	Allentown	Akron	Appleton	Denver	Toronto
Springfield, Mass.	Harrisburg	Louisville	Chicago	Dallas	London
Providence	Erie	Memphis	Peoria	Salt Lake City	Osaka
New York City	Johnstown	Chattanooga	Evansville	Butte	Tokyo
Albany	Pittsburgh	Knoxville	St. Louis	Spokane	Oslo
Syracuse	Wheeling	Nashville	Kansas City	Seattle	Melbourne
Rochester	Washington	Miami	Des Moines	Portland	Athens
Buffalo	Charlotte	Birmingham	Minneapolis	San Francisco	Buenos Aires
	Cleveland	Indianapolis	Duluth	Calgary	Shanghai

THE ARCHITECTURAL RECORD

F.W. DODGE CORPORATION

Published monthly by

F. W. DODGE CORPORATION

115-119 West 40th Street
New York

Truman S. Morgan, *President*

Sanford D. Stockton, Jr., *Secretary*

Howard J. Barringer, *Treasurer*

M. A. MIKKELSEN
Editor

A. LAWRENCE KOCHER
Managing Editor

C. THEODORE LARSON

K. LONBERG-HOLM

JOHN M. WILLIAMS
General Manager

J. A. OAKLEY
Business Manager

Parker Morse Hooper
Consulting and Contributing Editor

Howard T. Fisher

Fiske Kimball

William Stanley Parker

Henry Wright
Contributing Editors

VOL. 71 NO. 2 FEBRUARY, 1932

Cover: RACINE COUNTY COURT HOUSE, RACINE, WISCONSIN
Holabird and Root, Architects
Photograph by Hedrich-Blessing Studios

Frontispiece: RACINE COUNTY COURT HOUSE, RACINE, WISCONSIN
Holabird and Root, Architects

75-82 . . . . FACING REALITIES IN SLUM CLEARANCE
By Arthur C. Holden, Architect

83-88 . . . . NEW HOUSING FOR PHILADELPHIA SLUMS
Edmund G. Krimmel; John Graham, Jr., Purves and Day; Tilden, Register & Pepper; Architects Associated for Model Housing

89-116 . . . . PORTFOLIO OF CURRENT ARCHITECTURE
Racine County Court House, Racine, Wisconsin—Holabird and Root, Architects; Gideon F. Egner Memorial Chapel, Muhlenberg College, Allentown, Pa.—Frank R. Watson, Edkins & Thompson, Architects; House of J. W. Dean, Knoxville, Tennessee—Barber and McMurry, Architects; 137 East 57th Street Loft Building, New York City—Thompson and Churchill, Architects; House of W. Warren Barbour, Locust Point, Red Bank, New Jersey—Robert M. Carrere, Architect; Banks-Huntley Office Building, Los Angeles—John and Donald B. Parkinson, Architects.

117-120 . . . CHICAGO MUNICIPAL AIRPORT
By Paul Gerhardt, Jr., City Architect, Chicago

121, 122 . . . AN ALL-METAL OFFICE BUILDING IN RICHMOND
48, 50, 52, 56 (adv.) . . Built at a cost of 19.1c a cubic foot
By James Bolton, Department of Public Works

123-128 . . . DIMENSIONS: PART TWO—BEDROOMS, BATHROOMS
By A. Lawrence Kocher and Albert Frey

129-143 . . . TECHNICAL NEWS AND RESEARCH

PART ONE—INSTITUTIONS FOR THE MENTALLY AFFLICTED
By Lewis F. Pilcher, Architect

PART TWO—PLANNING THE SURGICAL FACILITIES
By S. S. Goldwater, M.D., Hospital Consultant

144 . . . . . CURRENT BUILDING TRENDS
34, 44, 46 (adv.) . By L. Seth Schnitman

29, 30 (adv.) . . ARCHITECTS' ANNOUNCEMENTS AND CALENDAR—THE APARTMENT HOUSE ISSUE

36, 38, 40 (adv.) . NEWS IN BRIEF

42 (adv.) . . . ARCHITECTS' LIBRARY

Yearly Subscription: United States, Insular Possessions, Cuba, Central America, South America, and Spain, $3.00; Canada and Foreign, $4.00; Single Copy, 50c. Member Audit Bureau of Circulations and Associated Business Papers, Incorporated. Copyright, 1932, by F. W. Dodge Corporation. All rights reserved.

Entered as second class matter May 22, 1902, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Printed in U. S. A.

RESTFUL LIGHT FOR TIRED EYES

When the army of business executives, clerks, stenographers and office boys moves into the Gulf Building, new home of the Gulf Oil Corporation of Pennsylvania, in Pittsburgh, they will note with delight the modern lighting globes provided for the comfort of their eyes. Macbeth Galax Globes in every office will shed a soft, diffused light, partly direct and partly indirect, dispelling shadows and reaching into every far corner. Scientifically designed to combine the advantages of both indirect and direct-diffused light, Galax Globes are made of one single homogeneous piece of glass of dual opacity, the upper part transmitting efficiently with slight diffusion, the lower part reflecting and glareless. At night, with the golden rectangles of hundreds of lighted windows forming an ever-changing pattern against the sky, the towering new Gulf Building will be a veritable cathedral of light. MACBETH-EVANS GLASS COMPANY, Charleroi, Pennsylvania. *Branch Offices located in the following cities:* Pittsburgh, San Francisco, New York, Toronto, Baltimore, Indianapolis, Philadelphia, Boston, Houston, St. Louis, Detroit, Buffalo.

Macbeth GALAX LIGHTING GLOBES

The Westinghouse Lunaire (Galax) . . . installed in the Gulf Building by the Westinghouse Electric & Manufacturing Company.

ANNOUNCEMENTS

Charles S. Peabody is withdrawing from the firm of Ludlow and Peabody, architects, 101 Park Avenue, New York City. Mr. Ludlow will continue the practice of architecture under the firm name of William Orr Ludlow.

Milton W. Morrison, architect, announces that he is practicing architecture, independently, in offices at 601 Forty-second Avenue, San Francisco.

Thomas M. James Company, architects, announce the removal of their offices to 164 Stuart Street, Boston.

Henry Chisholm, architect, announces the opening of a studio at Summer Street, R. F. D. 125, Mansfield, Massachusetts. His former address was 19 Chester Road, Belmont, Massachusetts.

Mr. Henry K. Holsman, 307 North Michigan Avenue, Chicago, is chairman of a committee of architects who are studying the reclaiming of blighted areas.

APARTMENT-HOUSE MEDALS

It has been the custom of the New York Chapter to offer a medal each year in the interest of stimulating better apartment-house design. For the year 1932 the award will be made as a result of an exhibition to be held in the exhibition room of the Architectural League, 115 East 40th Street, from February 29 to March 1.

Exhibits are requested in the form of photographs of buildings together with a typical renting plan.

The Committee will divide the exhibits into four classifications as follows:

1. Tower types of apartments.
2. Apartments developed on city plottages less than a block front in extent, both fireproof and non-fireproof.
3. Apartments developed by large-scale planning, ranging from entire block front to the occupancy of the entire block or more than one block.
4. Suburban apartment-house types.

Buildings finished within the period of three years from October 1, 1931, are eligible.

The medal is awarded to the owner of the building. The architect's name is to be mentioned.

Exhibits should be submitted to the office of the chairman of the Apartment-house Medal Committee—Arthur C. Holden, 670 Fifth Avenue, New York City.

RUSSIAN THEATER DESIGNS

An exhibition of models submitted by American architects at the international competition for a national theater in Kharkov, Ukrina, Russia, two years ago, will be held from February 8 to February 21, at the Hotel Winthrop, 47th Street and Lexington Avenue, New York City. Albert Kastner will exhibit his model which won first place in the Kharkov show. Among other Americans who competed were Oscar Stonorov, Albert Klaus, and Charles Daub, and Norman Bel Geddes of New York, and John Raben of Chicago.

EXHIBITION OF "NEW ARCHITECTURE"

The first exhibition of the American Union for New Architecture will be held from March 28 to April 11, inclusive, under the auspices of the Hotel Winthrop, 47th Street and Lexington Avenue, New York City. All drawings, renderings, photographs or models of executed work or of projects submitted for exhibition by members and non-members of the Union will be passed upon by a jury of prominent architects, to be named later, not associated with the A.U.N.A. Any person wishing to enter the exhibition should communicate immediately with Richard C. Wood, executive secretary of the A.U.N.A., room 1405, 120 West 42nd Street, New York City.

EXHIBITIONS AND EVENTS

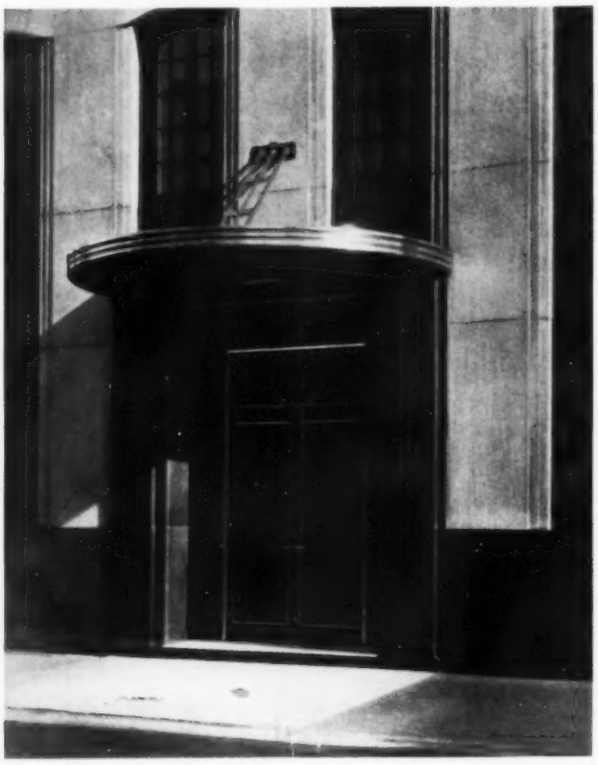
February 8-21	Exhibition of models submitted by American architects for a national theater at Kharkov, Ukrina, Russia, to be held at the Hotel Winthrop, 47th Street and Lexington Avenue, New York City.
February 10-March	Exhibition of modern architecture at the Museum of Modern Art, New York City.
February 26-March 12	Exhibition of the Architectural League of New York at 215 West 57th Street, New York City.
March 28-April 11	Exhibition of work by members of the American Union for New Architecture at the Hotel Winthrop, 47th Street and Lexington Avenue, New York City. For information, address Richard C. Wood, Room 1405, 120 West 42nd Street, New York City.
April 25-May 5	Exhibition of the Westchester County Society of Architects in connection with the second annual Westchester Home Show, county center, White Plains, New York.
July 30-August 14	Exhibition of art at the Los Angeles County Museum in conjunction with the American Olympiad competition of sports buildings by architects of the nations invited to the Olympic games. Address Secretary, American Olympic Committee, 233 Broadway, New York City.
October	International Congress for Modern Architecture at Moscow, U. S. S. R. Program: "The Functional City."

COMPETITIONS

February 29-March 1	Exhibition of apartment-house designs submitted in competition for the New York Chapter medal awards. To be held at the Architectural League, 115 East 40th Street, New York City. Exhibits should be submitted to Arthur C. Holden, Committee Chairman, 670 Fifth Avenue.
March 7	Mailing date of programs to approved candidates for the fifth annual competition for the A. W. Brown Travelling Scholarship. Address William Dewey Foster, 25 West 45th Street, New York City.

MARCH · NEW APARTMENT HOUSES

Van Anda
VAN TASSEL APARTMENTS, TARRYTOWN, NEW YORK.
ANDREW J. THOMAS, ARCHITECT



Hedrich-Blessing
1301 ASTOR STREET APARMENTS, CHICAGO.
PHILIP B. MAHER, ARCHITECT

In March will appear the annual Apartment House Number of THE RECORD — an entire issue devoted to multi-family housing and pointing out many opportunities offered to architects in this type of construction. Henry Wright, town planner and architect, and Eugene H. Klaber, Chicago architect, are collaborators on a special article which will trace the evolution of the garden apartment and the row house and analyze the latest developments in these fields. An outline of procedure for large-scale housing projects, showing how the architect can aid in formulating and executing such plans, will also be presented.

Supplementing Mr. Wright's and Mr. Klaber's articles will be an extensive portfolio of recent apartment houses. These illustrations, representing all parts of the country, will feature elements of practical value to the architect. Among the architects whose work will be illustrated are Rodgers and Poor, Sukert and Cordner, Ernest Flagg, Springsteen and Goldhammer, Philip B. Maher, Irving Chanin, Andrew J. Thomas, Charles A. Platt, R. Clipston Sturgis, Holabird and Root, Sloan and Robertson, Schwartz and Gross, Edmund B. Gilchrist, Th. Engelhardt, Emery Roth and Marshall P. Wilkinson.

AMONG THE CONTRIBUTORS IN THE CURRENT ISSUE

ARTHUR C. HOLDEN, a member of the architectural firm of Holden, McLaughlin and Associates, is well known for his economic and city planning studies.

PAUL GERHARDT, JR., city architect of Chicago, is the designer of the Von Steuben High School, Chicago, published in the May 1931 issue of THE RECORD.

JAMES BOLTON is chief of the Bureau of Surveys and Design, Department of Public Works, Richmond, Virginia.

LEWIS F. PILCHER is professor of architecture at Pennsylvania State College.

DR. S. S. GOLDWATER is a hospital consultant and administrator. His home is in New York City.

Hedrich-Blessing

RACINE COUNTY COURT HOUSE AT RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS

THE ARCHITECTURAL RECORD FEBRUARY, 1932
VOL. 71—No. 2

FACING REALITIES IN SLUM CLEARANCE

By ARTHUR C. HOLDEN, Architect

In this day of large-scale business enterprise it is unnecessary to argue that great economies are possible through organization and combination. It is perhaps more pertinent to point out the extraordinary fact that as yet the field of real estate has been scarcely touched by the tendencies toward combination which have dominated the industrial world.

In preparing planning studies for the rehabilitation of the Lower East Side slums of New York City, Mr. Arthur C. Holden, a member of the architectural firm of Holden, McLaughlin and Associates, has proposed the formation of equity trusts as a logical means of financing such a large-scale project.

In a recent article (HARPERS, November, 1931), he indicated that the way out of the present crisis may lie in the formation of great real estate trusts for the more effective control and efficient management of real estate. In this present article he discusses the work which must be done to clear the way for the formation of such realty trusts. Much that appears impossible in slum clearance under our present system of conflicting small-scale property interests, he points out, may be accomplished through large-scale control.

Much has already been written about the impracticability of the piecemeal improvement of blighted districts. The risking of new capital in an isolated building in questionable surroundings is not a project which appeals to the imagination of investors. It is admitted, however, that part of this risk is removed where construction can be undertaken upon a scale large enough so that the project itself establishes the desirability of its own neighborhood. When it is possible to plan for the neighborhood on a large scale so that each individual improvement may be made a part of the general scheme of rehabilitation, the investment has a very real safeguard.

The State's Right to Limit the Use of Privately Owned Realty

The apparently unsurmountable difficulty lies in getting the great number of present owners of small parcels of real estate to cooperate on a great improvement project. Obviously there must be unified control of the property. The purchase of a large tract from a group of individual owners, each of whom is in the mood for recovering past losses through the profits of sale, is unthinkable because of the power which it places in the hands of the individual owner who refuses to sell. A most important step has already been taken in the attempt to get around this difficulty. Special legislation in New York State has been passed chartering special housing corporations under the supervision of a State Board of Housing and authorizing municipalities to extend to these corporations the right of eminent domain so that, where necessary, condemnation proceedings may be used for the assembly of property. To date condemnation has not been resorted to by any housing corporation.

The acquiring of land whether by open sale or by condemnation is such an expensive process and requires the tying up of such a large amount of new capital before any improvement is attempted that it has discouraged the hope that a systematic reconstruction may be undertaken on an economic basis.

Under the New York State Housing law and others modeled on it, the housing corporation which acquires property by condemnation must take the property no matter how high the award and yet the corporation finds itself limited by the law both in the rents which it may charge and in the dividends which it may pay. Both of these are reasonable provisions. Where the state takes property from one citizen and turns that property over to a corporation to own, obviously the exploitation of the property cannot be allowed. The use which the corporation makes of the property must be a public service and that service must be administered in the interest of the community. Housing laws recognize this principle.

The broad power of the state to regulate the use of property in the public interest has long been recognized. No citizen may maintain a nuisance upon his property, no citizen may build upon his

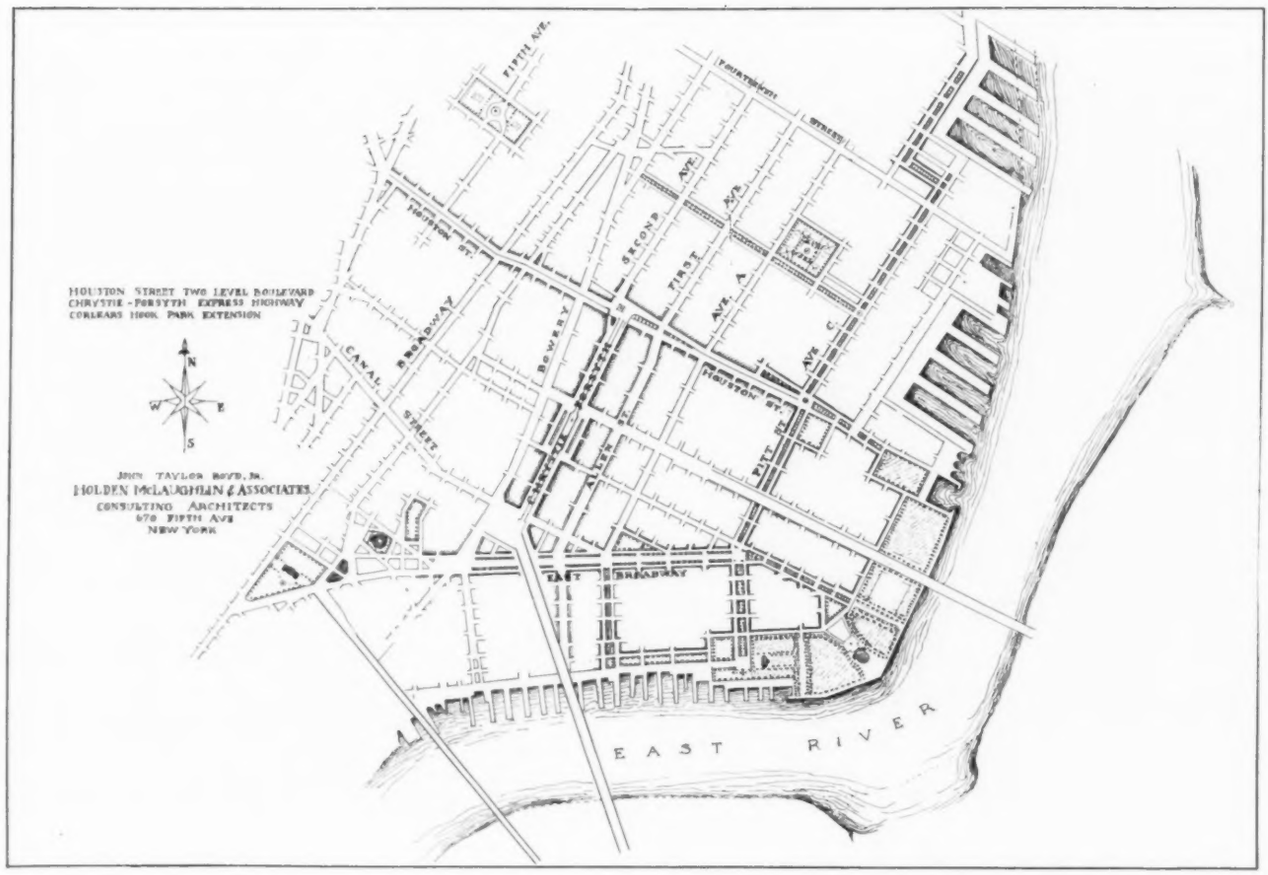
Airplane view of the Lower East Side of New York City, showing recommended arterial streets and waterfront park.

property in such a way that it is a fire menace or a menace to public safety. Today no citizen may build upon his property in such a way that he violates the established usage of the neighborhood, either as to the height of the building, the density of the land coverage, or the type of use to which the building is put. These principles have been written into our zoning laws and established by court decisions.

The state, however, has gone still further in the restrictions which it has imposed upon the control of private property. No citizen may build, even upon his own property except at his own risk, upon a site which falls within the boundaries of a street, road or public space that has been laid out on the official map of the community. The city can assure the preservation of a proposed site for a road or public space simply by putting it legally on the official map. When this is done the owner, so far as the city is concerned, is limited to such uses for that part of his own property as will make him a reasonable temporary return. Other states have followed New York by similar legislation although California has put a limit of five years upon the period during which property may be restricted by mapping. At the end of that period the municipality must take the property or abandon its plan.

The principles governing the regulation of private property by the state which have been established by legal sanction are of the utmost importance. Certainly, if the state can regulate property in a prohibitory way and if the state can take property necessary for public use and pay for it, it is to the interest of the state to obtain the public advantages sought in the way that is most economic and advantageous to the body politic. In practice it has been found that private owners have been willing to turn over their property at low cost or no cost at all in consideration of the advantages to be derived from improvements to be made by the state or municipality. On the other hand, if the state can obtain the same public advantage without any public expense whatever, it is justified in negotiating with private owners. The principle of special franchise for special public service has long been recognized.

Where the municipality through zoning and mapping has already limited the use which owners may make of their own property, it is not unreasonable for the state to permit the relaxation of certain of these restrictions provided the owners of adjoining properties agree voluntarily to develop their properties in such a way as to serve better the public interest. In simple words, if individual owners can be made to act together in such a way



Key plan for the rehabilitation. Areas between the arterial streets may be developed as district units or subdivided into units of desired size.

that individual rights will not be injured and at the same time the public interest will be better served, then the state can afford to grant owners, who agree to cooperate in such a way, special rights for development and a special franchise under which to act.

Benefit to Present Owners the Governing Motive for Assembly of Property

In the light of this logical proposal let us consider what might be accomplished through it for the rehabilitation of blighted districts. Perhaps the best-known blighted area in the world is New York's Lower East Side. Here is a district which during the period of unrestricted immigration served as the temporary home where hundreds of thousands of recent immigrants could find cheap lodging close to their own countrymen. Congestion made it possible for the antiquated tenement houses to earn rents greater than their condition warranted. The erection of more desirable buildings in other quarters of the city and the cessation of immigration have changed the economic status of the district. Now the necessity for improvement is recognized. Rents have declined. The property as a whole is unable to pay its own way. Many owners have been obliged to pay out money annually in order to keep their equities or have let their property revert to the owners of the mortgages rather than carry it at a loss.

The necessity of public improvements has been urged upon city officials, yet the property owners of the district have united in declaring that the economic depreciation of their property has made them incapable of bearing the cost of assessments for benefit. The city, on its side, although it has inaugurated several very important street widenings, has declared that wholesale improvements on the scale suggested could not be met out of the city treasury, unless a large share of these costs could be paid by local property owners who would enjoy the benefit.

Both city officials and present property owners are confident that improvements are necessary before the desirability of property in the district can be restored. Although he may be of a cooperative spirit, no property owner is willing to make the first sacrifice even though it entails the dedication of only a small strip of his frontage to a street widening. He is unwilling to see the property owners on the other side of the street make no sacrifice at all and yet derive a benefit even greater than himself who made the original sacrifice. It is comprehensible why a property owner in this state of mind feels that the city ought to do the job. On the other hand, it is reasonable for the officials of a city already close to the debt limit to

expect cooperation from its taxpayers. There is no question of the benefit that would be enjoyed by all present owners and the city as well if the conflicting interests of individual owners could be reconciled.

If the city is too encumbered to undertake the financial responsibility of rehabilitation it can delegate its powers to an agency capable of acting for it. For example, it would serve public interest for the city to grant to all owners within a given district the right to act together for their collective benefit and for the benefit of the city. The legal machinery would be difficult but not impossible. It would necessitate the creation of a district authority to act in the capacity of trustee for the interest of all owners. This agency might take the form of a real estate trust which would provide a pool into which each owner could put his individual interest in his property so far as ownership was concerned. He would then be a participating owner in the trust and would obtain in exchange for his isolated lot a proportionate share in the collective ownership enjoyed by the trust. Every owner, moreover, would retain the right to enjoy the fruits of ownership to an amount equivalent to the benefits which he was actually enjoying at the time of the pooling of interests.

The Mortgage Interest

No pooling of equities could be accomplished without consideration of the very large mortgage interests involved. Here again there are two factors to be considered: first, the income due as interest on the mortgages, and second, the repayment of the principal. The very nature of a mortgage, which has been made a legal investment for trust funds up to 50 and 60 per cent of appraised values, is a warning for caution. Savings, trust and life insurance institutions cannot afford either to take or to permit any action to be taken which would jeopardize their trust funds. Therefore, such action as is taken must be with their approval and must serve their advantage. Many of these institutions are faced with a problem today as to how best to handle depreciated properties which have already defaulted or are in danger of defaulting in their mortgage obligations. In an inactive real estate market, the forced sale value of property cannot be depended upon for security. If the holders of mortgages cannot sell at foreclosure at a price high enough to liquidate the mortgage, they are compelled to look to the real source of value, namely, the income-earning ability of the property. It is, therefore, to the interest of mortgagees to encourage any movement which will restore or improve the ability of mortgaged property to earn income. If the security of the mortgage can be improved by making it self-supporting, it may even be reasonable to grant a reduction of a point or half a point in the interest rate.

Fortunately, in the ordinary course of assembling properties by sale, the practice has grown up of spreading the mortgages upon the individual plots so as to form one new consolidated mortgage covering all the assembled property. A mortgage of this type may be held by a trustee and mortgage participation certificate issued to the various interested parties. It is possible at the time of making such agreements to take care of inequalities by discounting weak mortgages and readjusting the interest rate. In this practice there is the precedent for spreading and consolidating the old mortgage obligations upon depreciated properties. Indeed mortgage institutions may make an agreement to consolidate the mortgages a condition for allowing a mortgage to stand or for consenting to its renewal. At the present time the mortgage institutions hold the whip hand. So far as blighted areas are concerned, the additional security gained by consolidation is self-evident. It only remains to work out a pattern for consolidation which will secure the maximum benefits possible without loss of some of the very evident benefits in the system of dividing large mortgage funds into individual mortgages.

There is not space within the compass of this paper to discuss all the implications involved as well as the advantages to accrue through consolidation of mortgages in blighted areas. (It is proposed to take this up elsewhere and to discuss it in detail primarily from the point of view of the mortgage investor. Then it will be possible to bring into the discussion the comparative soundness of mortgage investments in old districts and in new districts with special emphasis upon district control as contrasted with lack of control or individual responsibility. Such a discussion will bring out the comparative insecurity of the individual mortgage upon even the well-constructed house in the hands of a financially strong owner, when unprotected by sound economic and social relationship to its neighborhood and to general housing needs.)

The Situation With Regard to Present Leaseholders

Where an assembly of property is undertaken for the purpose of reconstruction or reorganization the legal rights of present leaseholders are frequently found in conflict with the interest of property owners. Where property is assembled for a public purpose and condemnation is resorted to, leases are terminated under the law. Where, however, private property is assembled by purchase the situation is very different. Those interested in assembling property for Radio City in New York City were compelled to buy out present leaseholders. In several critical cases where long leases existed leaseholders were in a position to exact a price for the surrender of a lease greater than those interested in the assembly of the property were able to pay.

In spite of the fact that vacancies existed in equivalent properties located even as close as across a 60-foot street, there was no power to compel a holder of a lease to vacate his present premises and accept in exchange an equivalent property even though equally or more advantageously located.

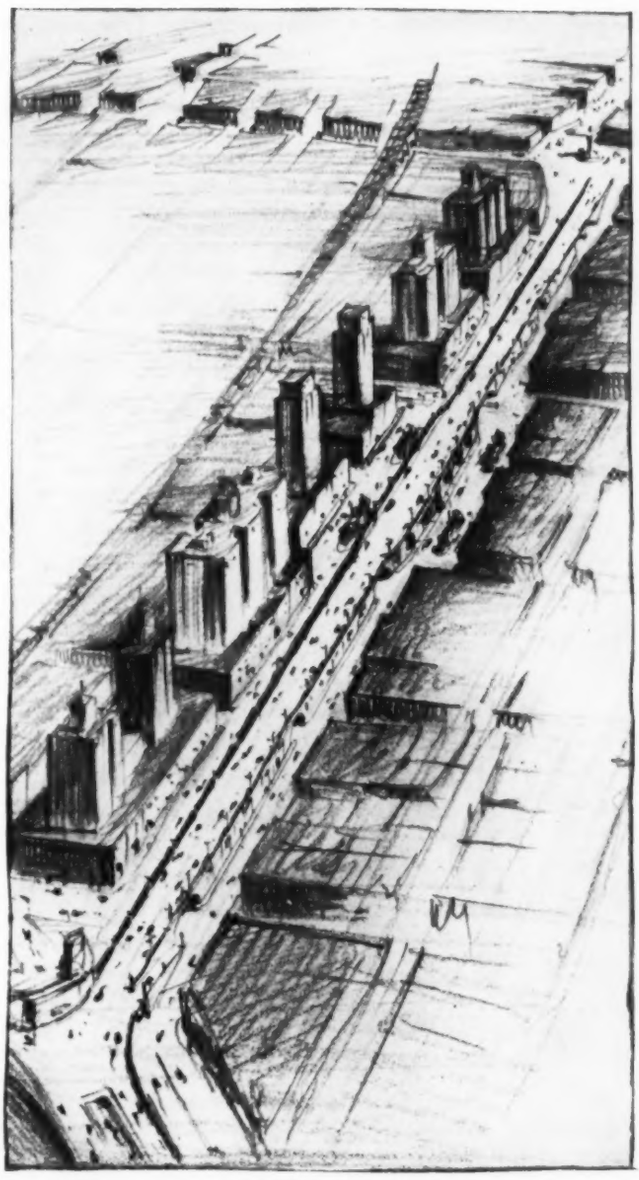
This difficulty can be circumvented by writing into leases clauses binding the tenant to accept substitute premises provided they are equally advantageous for his purposes or other clauses governing the surrender of the lease. In an enactment of enabling legislation, which will facilitate the chartering of district improvement associations or equity trusts to administer properties within a large area, provision should be made for an exchange of leaseholds to permit flexibility of administration and to prevent the exaction of a price for the surrender of a lease which, from an economic point of view, can jeopardize the success of the improvement.

The Transitional Stage

The immediate problem is the very critical transitional stage of the conversion of a blighted district into one which is economically and socially rehabilitated. During the transitional period there are two essential problems. In the first place the income interest of both owners and mortgage investors must not be jeopardized. In the second place, the cost of the transformation and in particular the cost of carrying the project during the transitional period must not roll up capital obligations greater than can reasonably be met by the economic operation of the property after the rehabilitation is complete. The immediate problem is, therefore, what are the owners of the equities and the mortgages of our blighted areas to be given in exchange which will satisfy their income requirements and give them a share in the ownership of the combined property? This should, of course, fairly represent their deserts and at the same time be economically possible.

The first difficulty will obviously be to overcome exaggerated notions of potential value. Market prices which in reality reflect desire rather than economic possibilities are frequently maintained only by the ability of owners to shoulder continuous losses in the expectation of ultimate profit through sale. In the case of certain advantageously situated properties greater expectations are justified even though these properties at the present may not be yielding a return on the investment. This potential value must be given reasonable consideration. It would be obviously unfair to establish arbitrary principles of valuation which would not allow due weight to be given to many varying considerations of ownership and real estate administration.

It is likely that detailed analyses will disclose many situations where present owners have been withdrawing greater sums from their properties than warranted by correct bookkeeping methods. In some cases properties which are actually losing money have been kept going by financial jugglery such as borrowing on junior mortgages or long delayed credits for materials required for maintenance. In other cases losses have been balanced by definite privileges enjoyed by individual owners, such as the possession of an advantageous site for a store location occupied by the owner, himself, at a merely nominal rental. There will undoubtedly be cases where scientific valuation will disclose operating deficits and possibly capital deficits so that it may be virtually impossible to set a valuation, unless it be a negative one, upon the equity. In cases of this kind the only solution may be for the Equity Trust to rent the property on carefully drawn long-term leases. In this way the burden of clearing the property of present encumbrances may



Perspective showing one of the suggested developments for the Chrystie-Forsythe Express Highway which will adjoin the Houston Street Two-Level Crosstown Boulevard. Industrial lofts and showrooms are recommended for the lower portions of the abutting buildings. Hotel towers may rise to the sunlight above. This new shopping center may also provide bus terminal and transfer station. Holden, McLaughlin and Associates, architects.

be placed upon the present owner. The privilege of converting the leases into equivalent trust shares at a future date can be reserved.

The Equity Trust should have the greatest possible freedom to secure immediate administrative control of all the properties within the district upon the most favorable terms possible. In order to arrive at terms which are equitable both for present owners and for the Trust a careful study of the present situation of all the individual parcels of real estate will have to be made.

System of Scientific Valuation

A system of valuation should be worked out which would be the result of appraisals made from different points of view, combined and weighted in such a way as to make the resultant final valuation equitable in the broadest sense of the word. The following considerations should govern:

1. The income record of the property should be reviewed over a period of years. The relation of gross to net income, as well as the administration and upkeep of the property during the period, should be studied. Its financial structure should be carefully analyzed.
2. The property should be considered for land value only, that is to say, location, area, frontage, etc.
3. The buildings or other improvements should be considered from the point of view of both original construction cost and present replacement value. Due allowance should be made for both depreciation and obsolescence.
4. The past record of taxation and special or general assessments against the property should be considered.

The results of each one of these considerations should be carefully tested by relating them to the total values of the blocks in which the individual parcels are situated and to the values established for the whole district under consideration. Resultant values should then be obtained not by averaging, but by carefully weighting the considerations in the light of the conclusions reached. It should be borne in mind that all values are relative and that the purpose of a valuation prior to the pooling of equities is to establish the ratio of the value of the individual equity to the whole rather than the setting of an absolute money value upon the individual parcel.

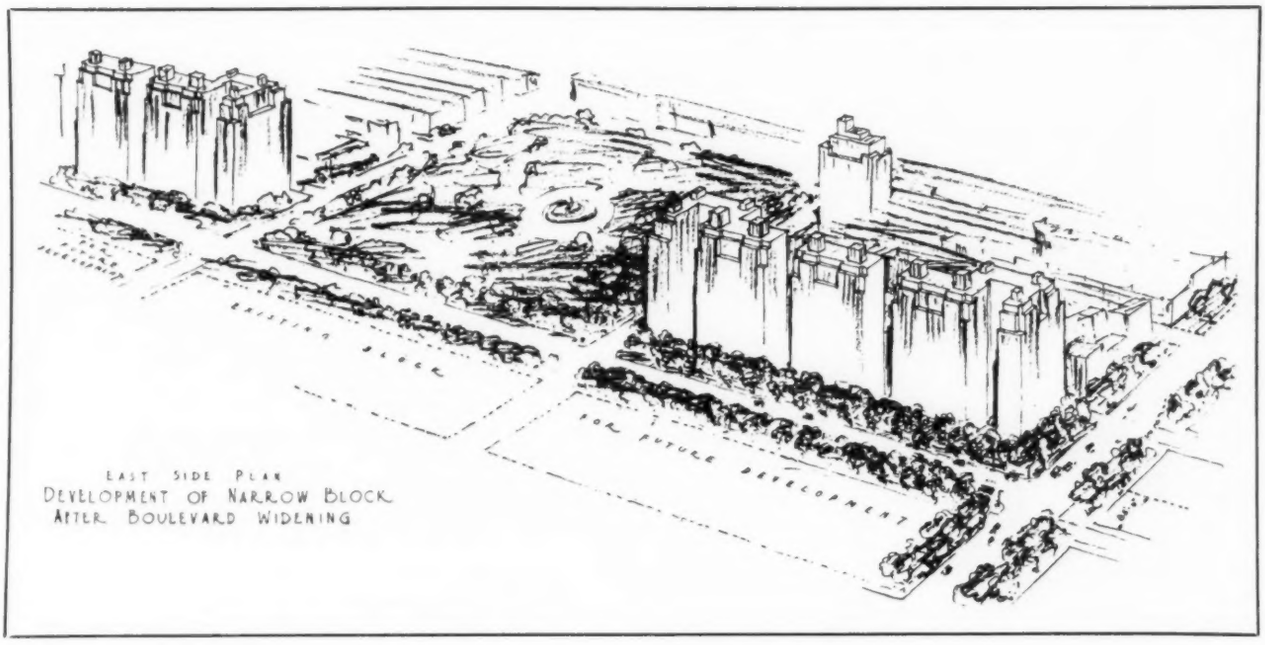
There are objections, of course, to the process of scientific valuation which I have suggested. It is said to be too cumbersome. It is said to be unnecessary. The suggestion has been advanced that it is far better to go out and buy the property in the open market in the usual way.

There are so many obvious reasons in favor of the establishing of equity valuations that it should not be necessary to name them:

1. To buy property in the open market requires a large amount of new capital. It should be illogical to contend that it is so easy to attract capital for the purchase of real estate that the delay and expense involved in analyzing the value of the real estate may be avoided.
2. It is essential before embarking upon a project for large-scale reconstruction to study carefully the economic structure of the project. This can only be done after a careful study of present values based upon present conditions.
3. If new capital is required in a reconstruction project a minimum amount of capital should be dissipated to compensate present owners for either the mistakes or the achievements of the past.
4. Only by a careful study of valuation and administration can the net rental equivalent of property be discovered and a method worked out of equitably compensating the owner for the use of his property during the transition period on the basis of income.
5. Through careful studies of valuation it is possible to determine the ratio of the value of individual parcels to the valuation of the whole district. It is possible after scientifically determining these ratios to issue certificates representing fractional shares in the whole property in exchange for the deeds to individual parcels and thus consolidate the entire property without capital expense except for the cost of the valuation studies.
6. The issue of Equity Trust certificates places in the hands of the original owners a form of security which should be readily marketable, and which could be exchanged without altering the capital structure of the real estate represented, as is the case where realty is exchanged by direct sale.

Economies of Administration

Scientific valuation as the basis for pooling equities opens up an entirely new method for the administration of real estate. Economies of administration and physical upkeep may at once be introduced. The Equity Trust becomes responsible to its participant owners for increasing income and lessening outgo. Its first task is to increase *net* income. It is concerned with the net income of the whole district. It need not waste its resources in the vain attempt to eke out income from individual parcels which have proved unprofitable. It is free to concentrate on those parcels that can immediately be made to produce greater profits. The objection on the part of mortgage owners to the demolition of unfit buildings is removed because the consolidated mortgage can be guaranteed by the whole district both as to principal and interest. As has already been pointed out, this guarantee should lead to the reduction of the interest rate and make possible the wiping out of discounts previously imposed because of the indefinite risks encountered through the chaotic and competitive individual op-



The new Tompkins Boulevard, showing a street-widening project developed with tall apartments upon a narrow block and with desirability assured by the proximity of the park. Holden, McLaughlin and Associates, architects.

eration usual in depreciated neighborhoods. Economies of this type are possible just as soon as the previously conflicting ownerships are merged in a common interest. It can be done with a relatively nominal investment of new capital.

A district which is now subject to continual expense for reappraisals and refinancing should not find the expense of one really scientific valuation burdensome; nor should such a district continue to suffer from the drains of wasteful individual management because of the preliminary cost of setting up an Equity Trust capable of centralized economical administration. Present owners should not be led to expect immediate benefit in the form of increased income due to the economies of group management. During the transitional period, distributions from new income should be kept to the minimum and efforts concentrated upon building up a working surplus out of earnings.

Use of New Capital

The Equity Trust offers other potential benefits which should be of far-reaching importance. In the average realty projects a large proportion of the invested capital is consumed in financing the purchase of land. This price must of necessity be high enough to induce present owners to forego their hope of future profits. Hence when land is purchased in the open market at least a portion of its potential earning power is discounted in advance. In the case of the Equity Trust there is no necessity for discounting potential earnings in advance. The participant owners are all alike interested in keeping both capital values and annual charges due to capital as low as possible.

The problem before the Equity Trust is land utilization, not land purchase. Every cent of new capital that is put into the Trust can be applied to improvements which will increase the earning power of land already acquired.

New capital must, of course, be attracted if a really comprehensive rehabilitation is to be undertaken. This new capital cannot be attracted into any project which is not basically sound from an economic point of view. Hence there must not only be a systematic, scientific valuation based upon the present situation, but there must also be a comprehensive plan for the replanning and rebuilding of the district and this plan must be founded upon sound economic principles. Speculation and exploitation must play no part in reorganization of the district and the administration of the Equity Trust. New capital may be obtained by borrowing if the economic situation warrants or it may be admitted to a direct share in the Trust.

It is perhaps reasonable to point out that the marketability of these trust shares should be increased in direct proportion to the success of the management of the trust in increasing net income and in building up a working surplus. The price of the trust shares may increase and the owners of the shares may directly benefit thereby and yet the economic organization of the property will not be disturbed by a change in the price of the shares. This is to be contrasted with the situation produced when the equity representing an individual parcel of real estate is sold at a profit. Immediately the relationship between income and invested capital is altered, frequently to such an extent that property will not carry at a profit and must be re-sold or re-financed, or frequently completely rebuilt, simply to justify the price paid.

Public Improvements

The most far-reaching benefit which can be realized through the Equity Trust is the simplification of the machinery for public improvements. Prior to the pooling of equities any proposed public improvement immediately accentuated the conflicting interests of individual owners. Each owner wanted the improvement made in such a way that his own individual plot was benefited and yet he was equally eager to shift as much of the cost of the improvement as possible to other shoulders than his own. The tendency to shift the burden to the municipality has made it necessary for the municipality to consider the varying merits of the various demands made upon it and, in many cases, to limit its assistance to those projects which promised the greater political advantage. Individual owners of small plots by their failure to see a common interest and by their insistence upon their own individual desires have made public improvements difficult and unnecessarily expensive.

Under the administration of an Equity Trust a district may study its own needs and plan for its own future. Such areas as practicable may immediately be cleared for public improvements without any capital expense for land. For example, an entire block measuring 200 by 600 feet may be rebuilt in such a way that the ordinary drab 50-foot street on which it fronts may be widened to a 120-foot boulevard. The change may be made provided only that, within a reasonable time, the net earning power of the entire district is increased sufficiently to pay an adequate return on the new capital. This must allow for interest charges, taxes and reasonable depreciation. Since the benefit of all improvements will accrue to the whole district and since it will be impossible for individual owners to appropriate or exploit the benefit desired from improvements it will be possible to make these improvements without loading individual properties with burdensome charges arising from assessments either for damages or for benefits. It is obvious, of course, that improvements must be reasonable and must be in accord with a plan well thought out in advance.

It should be obvious that with reasonable forethought the Equity Trust should be able to set aside certain properties for immediate improvement without sacrificing the present income derived from them. It should be possible to offer equivalent accommodations to present tenants in other properties within the district. There should always be the proviso that desirable tenants who cooperate may be rewarded with the original choice of improved localities as soon as available.

Limitations

No comprehensive plan of the rebuilding of a blighted area can be carried out except as a matter of slow and orderly progress. It is altogether probable that it would be unwise for the Equity Trust to attempt to carry the whole burden of reconstruction. It should be pointed out that the primary purpose of the Equity Trust is to increase the net earning power of the district as a whole. The pooling of equities should be in fact the pooling of interests. Conflicting rivalries which have been producing such dangerous economic waste in the past must be eliminated. So long as the Equity Trust maintains control and secures the advantage due to administration for a common purpose it may delegate to subsidiaries the development of individual units under the supervision of the Trust. There is a great range of possibilities.

Subsidiary corporations may be formed to build and develop certain of the improvements needed. The ownership of the stock of these corporations may rest entirely with the Equity Trust or may be drawn from independent sources. The Equity Trust may lease a parcel of land for development by independent owners or by corporations and thus secure to itself the desired income from ground leases and by the contract of the lease maintain the control it desires of the development.

Economic Necessity for Pooling of Equities

Although there is no room within the scope of this paper for a broad discussion of the economic situation in real estate, it would be incomplete without reference to the economic necessity which is compelling unified action on the part of those interested in real estate located in blighted sections, whether they be owners, the holders of mortgages, or tenants. Nothing but a sudden influx of population, such as a wave of immigration comprising largely the types of families driven by economic necessity and limited in their choice of homes, offers any hope to our blighted districts of increasing their income on the basis of individual administration.

It must be recognized further that, even were a wave of sudden immigration possible, which might offer a hope of restoring the population of New York's Lower East Side with this great influx, there would be a choice of site in some of the newer communities which have recently been opened up on the outer districts of the city. These newer districts have been undertaken on the basis of sale and turn-over and they, too, are already feeling the economic pressure which will compel congestion. Many of them are already taking on the aspect of blighted districts and they will compete in the future with the older districts for population and for tenants.

The situation which confronts the blighted districts, especially those which are centrally located and on potentially valuable land, is that they cannot carry on and that they cannot continue to live upon borrowed capital unless they can restore their earning power. It remains for the owners of blighted districts to recognize their situation and to pool their interests before further economic damage is done. No amount of study should be spared which may help them to organize effectively for the restoration of their earning power.

NEW HOUSING FOR PHILADELPHIA SLUMS

EDMUND G. KRIMMEL; JOHN GRAHAM, JR.; PURVES AND DAY; TILDEN, REGISTER & PEPPER,
Architects Associated for Model Housing

A group of architects in Philadelphia has been organized to study slum clearance and better housing. This action did not result from the present depression but from long advocated needs. Many of the municipal activities have led to the erection of buildings of non-revenue producing character. The deteriorating homes are falling in value and bring small return to the city. Endless rows of monotonous houses built since the war are cheap and tawdry; many new districts of homes are nothing more than potential slum areas.

To rehabilitate the blighted areas with desirable housing accommodations for low-wage earners is the program set up by these Philadelphia architects. Their methods of procedure—the study of incomes and rentals, the survey of available properties, the planning to meet local needs, and the efforts to secure State laws enabling slum clearance—are described in this article.

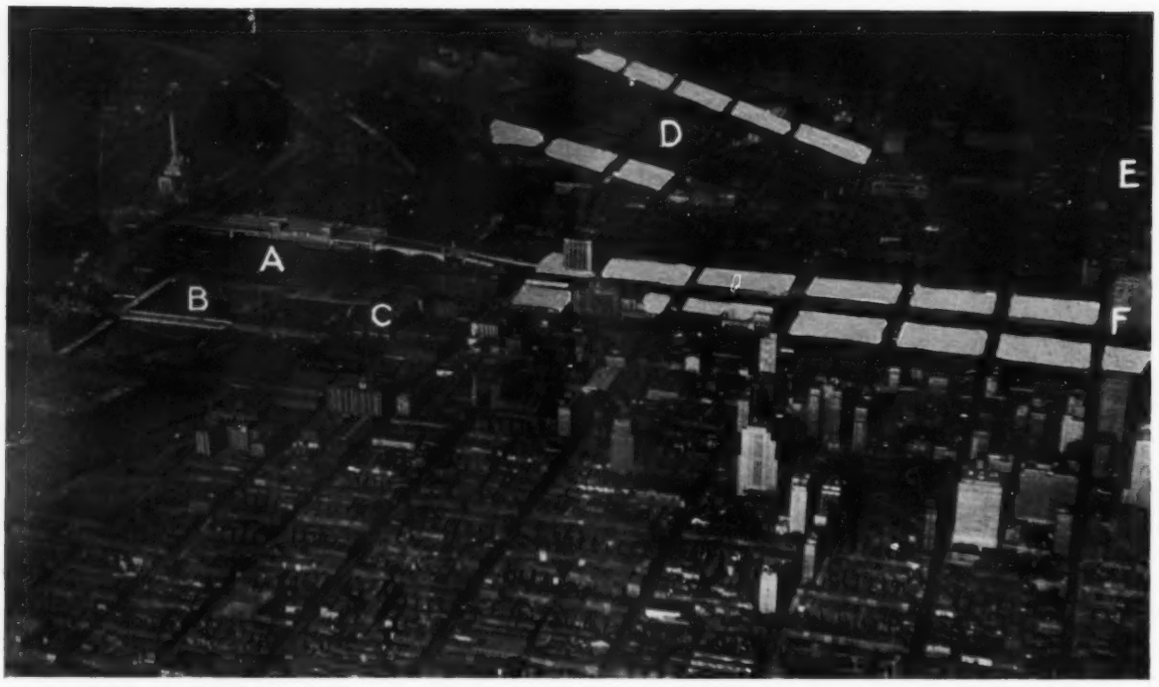
Philadelphia has acres of deteriorating residential areas which are growing in size, and public improvements are unwittingly aiding them on their downward path. No effort has been made to bolster up good neighborhoods which have started to decline. High speed transportation lines—built with the taxpayers' money—aid the people to flee from the blighted areas faster than the central commercial realty can develop and absorb them for other uses. The people are in no proper way encouraged to stay within the city.

The shifting of recognized respectable residential districts has always been accompanied by less municipal interest in the old districts, less policing, less enforcement of laws. The old houses built for the comfort of one family had a garden and open spaces. When they were deserted for more fashionable quarters they were re-occupied by many families and the open spaces were built up with cheap tenements, offering even less convenience and comfort than the original houses. Each movement of the respectable residential districts has left behind a trail of slums.

Disposition of Slum Areas

The first study of the problem for correction of conditions was disheartening; the areas were large and appeared in numerous sections of the city. An advantage was seen in attacking the oldest slum areas, those nearer the municipal center. The central towering mass of the city, with its accompanying high property values, makes it prohibitive to consider corrections within the actual hub of the city. But just beyond the hub there is a band of blighted property fast receding in value, all but encircling the center city. Our first problem was to consider what was the best disposition to make of these areas, what future could be expected for them.

The many large improvements taking place in the center of the city were reviewed. The new location of the Pennsylvania Railroad Station and the placing of the new railroad tracks underground will mean the removal of that existing elevated railroad, the infamous "Chinese Wall," and will make available large parcels of undeveloped property. The vacated Baldwin Locomotive Works places eight more central city blocks on the real estate market and the location of all this property between railroad terminals and high speed transportation lines makes that area ideal for commercial development. Many blocks bordering the



PHILADELPHIA IMPROVEMENTS AND AREAS AVAILABLE FOR IMMEDIATE DEVELOPMENT

A. New Pennsylvania Railroad Station. Under construction.
B. New Post Office. Under construction.
C. Baltimore and Ohio Railroad Station. A new river drive will be extended on both sides of the river and developments along the drive will follow.
D. Parkway to Fairmount Park. Tracts of undeveloped land on both sides of drive suitable for high-rental apartments.
E. Location of abandoned Baldwin Locomotive Works. Eight city blocks extending to Broad Street ready for commercial development.
F. New Pennsylvania Railroad Suburban Station. New Pennsylvania Boulevard to connect this station with New West Philadelphia Station will call for development of obsolete property on both sides. Lower white blocks show Pennsylvania Railroad elevated tracks which are to be abandoned.

Parkway have long been awaiting development for high-grade apartments. Along the established freight lines and river front there are opportunities for splendid manufacturing belts. Our survey proved that it will take many years before the demands of the growing city will reach back into the blighted areas to absorb them for commerce, high-grade apartments or industrial needs. For this reason the property in these areas has no speculative value and its only use is housing, but better housing than exists there at the present time.

Desertion and Rehabilitation of Slum Areas

Years of service and neglect of reconditioning have turned these properties into mere shells of buildings, entirely lacking in sanitary necessities, inadequate in heat and lighting, many of them dependent upon court hydrants for their only water supply. A rent survey made in 1929, of a typical slum area, showed that 71.7 per cent of the houses lacked indoor toilets. The narrow, damp courts are filled with filth, many of the empty houses are boarded up and those that are not have had all the windows smashed and the interiors gutted, adding to the distressing appearance of the neighborhood. Only dire poverty can force respectable families to stay in such districts. The houses stand today, breeding places of disease and crime.

Whether former inhabitants of these districts could be induced to rehabilitate these districts was a problem which gave us a little concern. Agencies, still in touch with families who had moved from the slums, gave encouraging reports. Among the clerks, the watchmakers, the mechanics, the laborers, city workers who moved to outlying districts, many regret their move and would gladly return if proper quarters were available for them. They long for the nearness of city life, the chance to walk, in a short space of time, from their place of work to their homes. The long hours spent on trolleys now rob them of much leisure time. These reports agree with experiences in London, Amsterdam and other European cities, where efforts were made to induce workers to live in industrial villages outside the city. Many of the European city dwellers, who had been transferred to the villages, soon returned to less comfortable quarters in the city, so proper accommodations had to be provided for them.

Reconditioning of Old Houses Not Practical

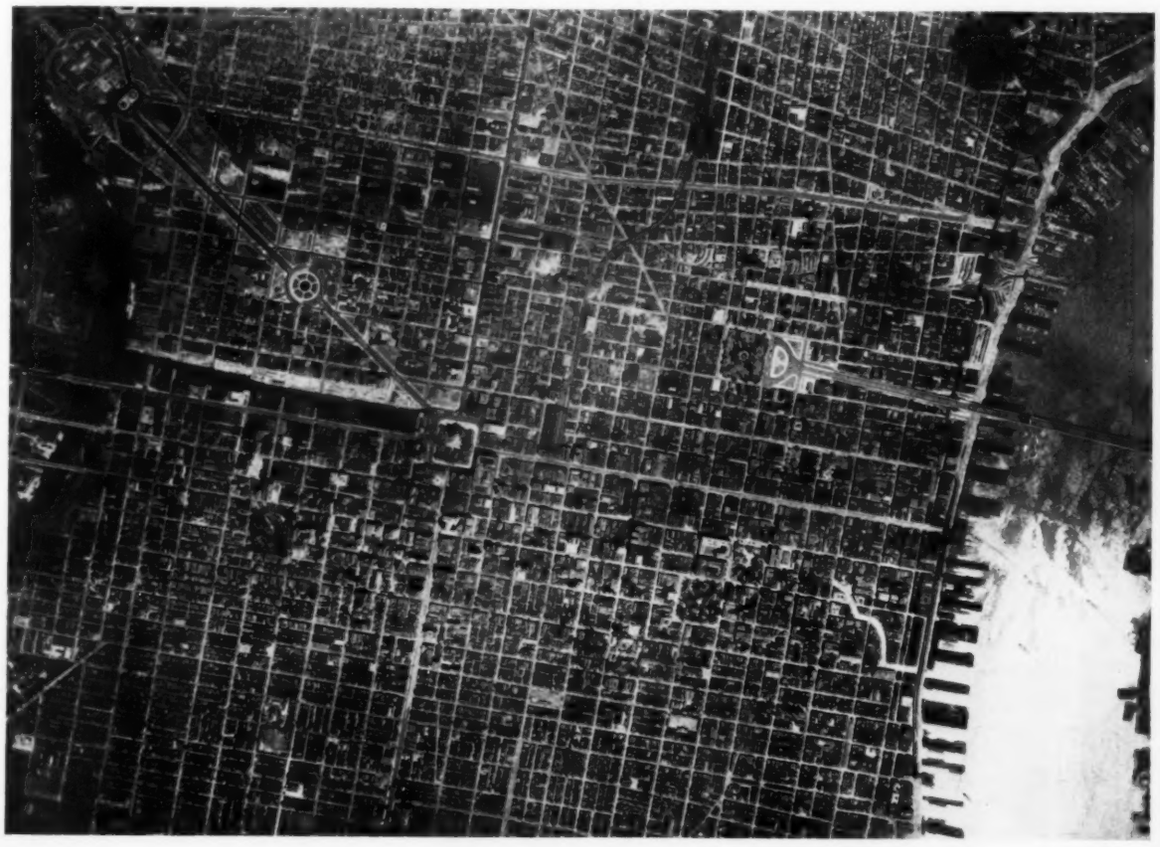
An attempt was made to plan for the reconditioning of the existing buildings, to prove that crowded, overbuilt sections of a block could be torn down and so provide the needed open spaces for the circulation of air and the admission of sunshine to the remaining buildings. This mode of attack soon proved to be of small value in obtaining adequate readjustment of housing conditions. Buildings, even after the expenditure of considerable sums of money on their "improvement" would fail to warrant financially the effort that had been made. The problem is far too great to be capable of solution by sporadic and incompleted attempts. Today property values are receding each year with no visible hope of improvement and the dilapidated condition of these old, worn-out buildings does not encourage the present landlords to repair them and none other than a philanthropic group can undertake to do it. The cost of replacing the decayed timbers and flooring, replastering, and offering the sanitation required in the city dwellings would be economic suicide from the point of view of the rent return that might be expected. The brightening up of a few houses in a block does not improve the neighborhood to any appreciable degree and it can only provide better quarters for the type of person forced or content to live in the midst of distressing conditions. Such altering of old houses is not enough of an improvement to induce the former inhabitants to return to these quarters.

Type of New Housing

Convinced by all of our investigations that the majority of the buildings in the slum areas could not be reconditioned, we sought the type of housing that would quarter people properly and, given the proper amount of open space under any sound financial plan, would offer a fair return on the capital invested in the project. The cost of buying in old properties and their demolition raises the price of the land to be built upon to between $1 and $5 a square foot, far too high a price to warrant the rebuilding of individual or row type of two- or three-story houses. The only type of housing that could be erected was the multiple dwelling type, or apartment.

Survey of Housing Preferences

The comfort and conveniences that can be offered in the multiple type dwelling have long ago been proven. Its advantage over closely built individual houses or rowhouses is a question of individual



CENTRAL PHILADELPHIA

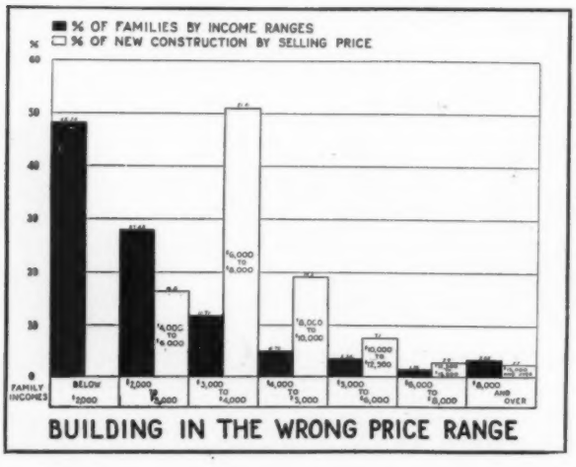
All important commercial developments are expected to take place in central and left half of city, leaving the old right half (to the east) no future except for low-rental housing.

A preliminary scheme in which each city block would have four apartment towers providing high rentals to make possible low rentals in the lower structures. This combination was later discarded.

preference or prejudice. The increasing popularity and absorption of quarters in apartments built for high-salaried groups in Philadelphia proves that for those groups the advantages of multiple type dwellings must outweigh any disadvantages. The only apartment for low-wage earners ever built in Philadelphia has been a failure, but it was built many years ago; it is dingy, offering few conveniences; it is more of a tenement type and cannot be classed in the same category with modern multiple dwellings; its failure cannot be taken as a criterion. However, to make certain that low-wage earners would prefer to live in apartments where there are the conveniences we propose to offer (air, sunshine, heat, open space for gardens), a survey is being made of the class we are aiming to rehouse.

Building Has Been in Too High a Price Range

The Philadelphia Housing Association has investigated very thoroughly the housing condition in this city. It points out that during the past wave of building too much housing space was provided for the higher salaried groups and many low-wage earners were encouraged to assume the burden of carrying houses too expensive for them; with the owners unable to continue payments, the properties fell into the hands of the Sheriff. During the post-War wave of building practically no new quarters were provided for that very large class, the low-wage earners. The accompanying chart, reproduced from the Philadelphia Housing Association brochure, gives a graphic picture relation between salaries and housing accommodations provided.



BUILDING IN THE WRONG PRICE RANGE

Rental Survey

What rentals could be expected from the low-wage group? In these blighted districts it is not uncommon to see signs on houses offering furnished rooms for rent at $2 per week. Four-room to six-room houses rent from $15 to $35 a month; certainly not encouraging figures. But the experience of every one interested in housing has pointed out that new housing cannot be provided for the very poor under any system except philanthropy and subsidy. European countries have not been afraid to face the problem and every branch of government has contributed towards the support of housing for the very poor. Our study proved to us that the workers earning between $1,200 and $2,000 a year can be offered better housing on a commercial basis. By eliminating the worst buildings, and rehousing the group that can be aided, better housing will be available for the very poor.

In an effort to provide for the lowest class of wage earners a plan was devised so that every city block would have four towers of apartments, placed near the corner of the block, in which would live the higher-wage earners. The center of the block was an open area around which, connecting the four towers, would be four-story walkup apartments or individual houses for the very low-wage earners. The higher rentals in the towers would make possible lower rentals in the lower buildings. But the tenants in the towers might object should they discover that they were paying higher rentals to help support housing for the low-wage earners. The towers were oriented so that long morning and late afternoon shadows would be cast over long, low roofs; the short high noon shadow would be cast across a short, low roof and with this arrangement the minimum amount of shadow from the towers would be thrown in the open court and never on the buildings on the far side of the court. In general, however, the three- and four-story walkup and the five- and six-story elevator types of apartment building offer the needed return on the investment. Any additional height absorbs capital that should be spent on correcting neighboring blocks.

Planning To Meet Local Needs

The tastes and demands of the incumbents of various cities differ to a marked degree. Rooms serve

one purpose in one city, a different purpose in another; the social life must have expression in the arrangement of the rooms. Since most families of wage earners in Philadelphia eat in the kitchen the provision of a dining room would be wasted in plan. But the kitchen, on the other hand, must be large enough to serve as a dining room as well, and an adjoining room be available for use as a dining room should this service be needed. Philadelphia, being an old city not subjected to a great movement of its workers, finds its people with large family connections and provision must be made for the entertainment of the family visitors.

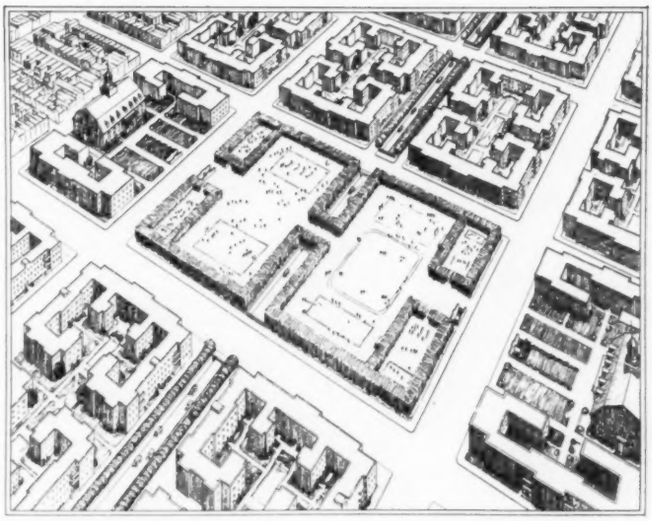
Large Schemes Necessary

Having come to a solution for the disposition of the old slum areas and the type of housing to be used in their rehabilitation, we studied the chance of success of such undertakings. New York is so formed that a single block of model housing can be developed in almost any part of the slum areas and be assured of its immediate success, but this is not true in Philadelphia, nor has it proven to be the case in Chicago, where a similar undertaking has not been very successful. A single block of model housing erected in the middle of a Philadelphia slum area, no matter how attractive or well-built, would be doomed to failure, because of the blighted sections the tenants would be obliged to walk through to reach their new quarters. Instead of working from the inside, we must start from an existing recognized respectable district or from wide thoroughfares on which people can safely travel. Only a large undertaking in a slum area could reasonably be assured of success. Entire new communities must be established to offset the blighted character of surrounding properties. In fact, tracts combining ten or twelve city blocks should be rebuilt in one operation in order to warrant the establishment of a city playground and other community features. These features must be included in order to insure the proper atmosphere for the entire group of buildings.

Enabling Laws Needed

Assembling of many small parcels of property, even in one city block, is a risky undertaking. The assembling of many city blocks would mean subjecting the buyer to robbery. No matter how much the desired property would be in need of destruction, no matter how good the purposes of offering better housing, no one could be assured that sharp speculators would not force up the value of the property needed to levels at which it would be impossible to offer new quarters to low-wage earners. We found there were no laws to aid us.

We remembered housing boards and bureaus set up in Europe, the laws given them to condemn unhealthful housing and the many plans that were adopted. In London two systems were followed. An owner holding property that was condemned as unhealthful was ordered to destroy the property at his own expense. If unhealthful property was within an area planned for model housing the property was seized and the owner reimbursed for land value only.



A four-lane high-speed road below the city street level could be built through existing slum areas. The model housing developed at the same time could be given the proper relation to parks, playgrounds, schools and social service buildings.

New York State has a housing law and during the several years of its existence it has been amended from time to time. It offers many things we needed and, believing that our legislative body would accept a bill based on an existing functioning law in another state, a State Housing Bill was drafted for the State of Pennsylvania, similar to the New York law. In our campaign for support in the legislative body we pointed out that slum clearance was the one enterprise that could be encouraged during a depression; an enterprise that would not interfere with already existing and suffering enterprises. Every other field of operation had been overbuilt: we had plenty of banks, office buildings, theaters, high-rental apartments and industrial plants. Our past building boom provided too much of everything but proper housing for the low-wage earner. The speculative builder has never been attracted to slum clearance. The movement would be the proper rehousing of the people, not the building of additional quarters. The bill became a popular one and endorsed by many groups. It passed the house with no more than fourteen votes against it and was passed in the Senate without a dissenting vote, but the Governor vetoed the bill because of a defective title and our program received a temporary check. Since then we have been consulting and meeting with many groups—Housing Associations of the State, of Philadelphia and Pittsburgh, Mr. Frederick Bigger, architect and city planner, and Mr. Charles S. Lewis, executive secretary of the Buhl Foundation of Pittsburgh—who have contributed valuable suggestions which have been incorporated in a revised bill to aid housing throughout the State. A report

has been submitted to the Governor showing the benefits that would accrue from a slum clearance program, the number of men who would be employed on the construction and in the industrial plants manufacturing building materials.

Housing In Relation To the City Plan and Budget

Since good housing is the background of every city, bringing assured tax returns for the existence of the municipality, offering respectable quarters to aid the morals and character of the inhabitants, more consideration should be given it in the city plan. It is the one class of property that should be nourished and protected with adequate district and zoning laws. Its neglect has led to the decline of many municipalities. There is little sound reasoning in assuming that a city can afford to extend new streets, sewers, water systems and offer fire protection in newly opened sections in the hope that the increase in accessible properties will warrant the cost of improvements when, at the same time, older sections have property receding in value. More returns could be gained by a municipality if it kept existing areas attractive and livable by making the necessary slight improvements to already established streets and services. The Bureau of Municipal Research has made a report on the expense and income of the city in newly developed districts. The servicing and improving of one city block containing thirty-one houses costs the city $7,600 a year and the income from taxes on the property is no more than $1,800 a year. Apartment houses in such neighborhoods immediately increase the return to the city because of their higher value per square foot of coverage.

Traffic Through Housing Belts

Of such importance is housing that it should be given its proper relation to all the elements entering into city planning, industrial and shopping districts, transportation and traffic arteries. The gridiron plan of Philadelphia was not designed for the convenience of the automobile. Any accommodation to be given this recent mode of transportation can no longer find a place within the active hub of the city, but because blighted areas lie just beyond and nearly circling the commercial area, arteries for high-speed traffic and distribution of traffic could be provided for in these areas together with the rebuilding of the slums at great saving to the municipality. High-speed streets could be lowered below grade and circle the central city as a canal, crossed only by bridges at street intersections, and allowing for the convenient entrance and exit of traffic at the principal thoroughfares. Such a suggestion has been offered to the City Planning Commission so that efforts at better housing could be linked with efforts at a better city plan, and that expenditures in one direction would be made lighter by the investment in the other and each improvement would enhance the effects of the other. The city could utilize a part of these blighted areas for the needed relieving traffic lanes, model housing could follow and the two projects executed at the same time would greatly reduce the cost that would accompany separate programs. The sinking of high speed lines along low-rental housing districts would assure the safety of the children and dwellers in the neighborhoods.

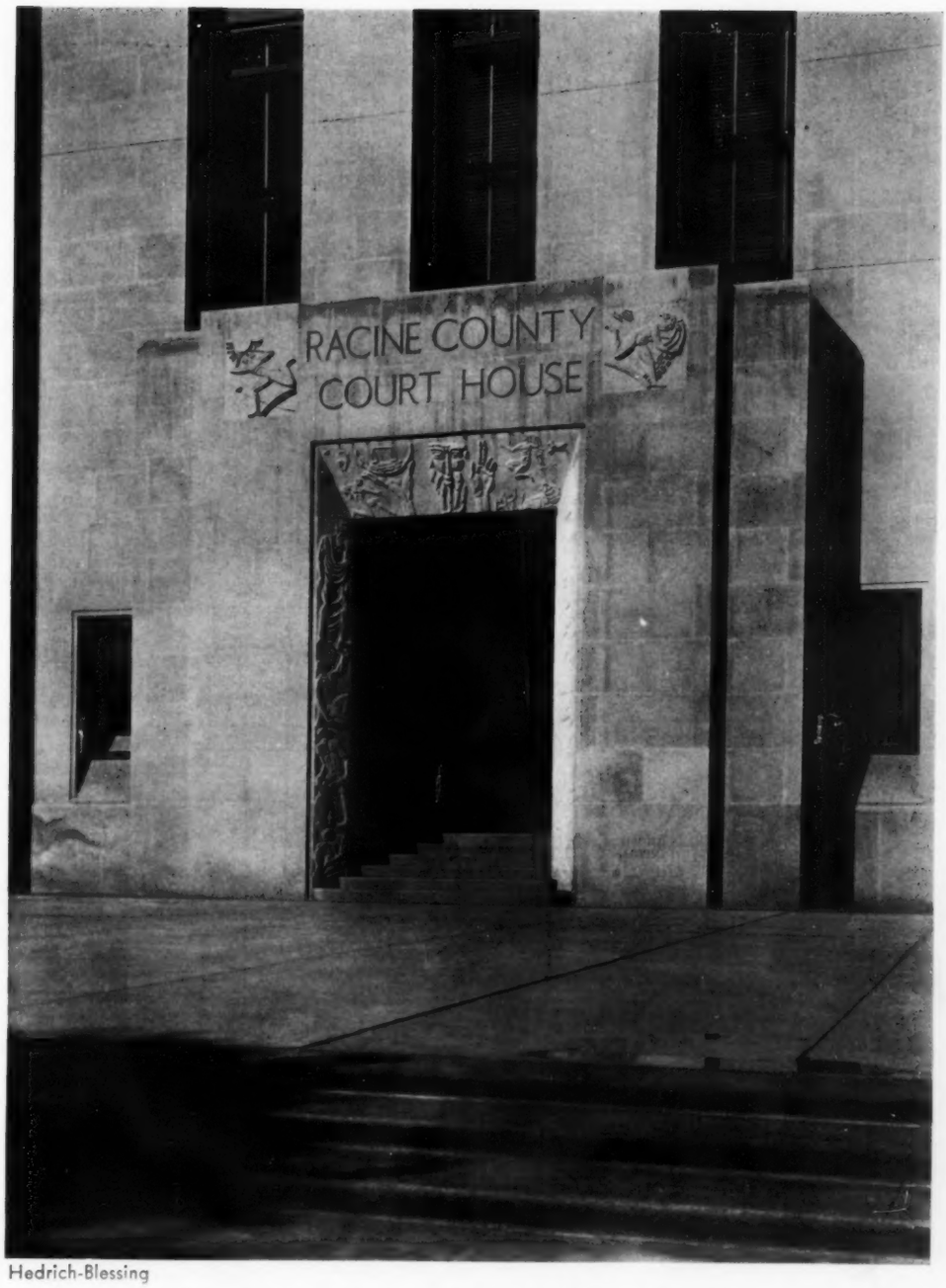
Slum Clearance and Unemployment Relief

The need for better housing is apparent. In order to carry out the object of the program—to secure good housing at low rentals—the most opportune time to enter into the work is during a period of depression, when property is low in value, when materials are low in cost and men are in need of work. To prove that a slum clearance program could be adopted as an employment relief measure we have listed the number of men who would be given employment on every city block destroyed and rebuilt, the length of time they would be employed and the amount of wages paid to them. A survey made by the Department of Labor and Industry at Washington in different parts of the country revealed that of the total cost of residential construction 48 per cent goes to pay the wages of the men employed at the place of construction. We also listed the number of men who would be given employment in the transportation and in the manufacturing of the materials used in the construction. With this information we could show that every five dollars invested to earn 6 per cent would draw ten dollars more into the project in the form of mortgage money and that nearly all of the five dollars invested as equity would go directly for the salaries of the men employed on the site.

Much criticism has been raised against the inadequacy of public works to relieve unemployment on the ground that of the large appropriations made, too small a proportion reached the laborer. We outlined a program in which all State or Federal funds appropriated would go directly for wages. It was proposed that the State or Federal Government loan to Limited Dividend Housing Companies, organized under State control, one quarter of the total cost of a housing project at the same low rate of interest available to them; the balance of the equity needed, about one twelfth of the total cost, would be raised from private capital in the communities where the slum clearance program was to be carried out. Under such a plan every million dollars loaned by the Government would enable a four million dollar project to get under way and this amount of work would employ more than three thousand men on a half-time basis over a period of nine months to a year. Every dollar of Government money loaned would be sure of going to the laborer. Leaders have been advocating similar plans and Federal or State Governments may eventually enter into them. No greater stimulus could be given the movement to rid our cities of their disgraceful areas.

PORTFOLIO OF CURRENT ARCHITECTURE

FEBRUARY 1932



Hedrich-Blessing

RACINE COUNTY COURT HOUSE, RACINE, WISCONSIN

HOLABIRD AND ROOT, ARCHITECTS

OTHER BUILDINGS ILLUSTRATED IN THIS PORTFOLIO:

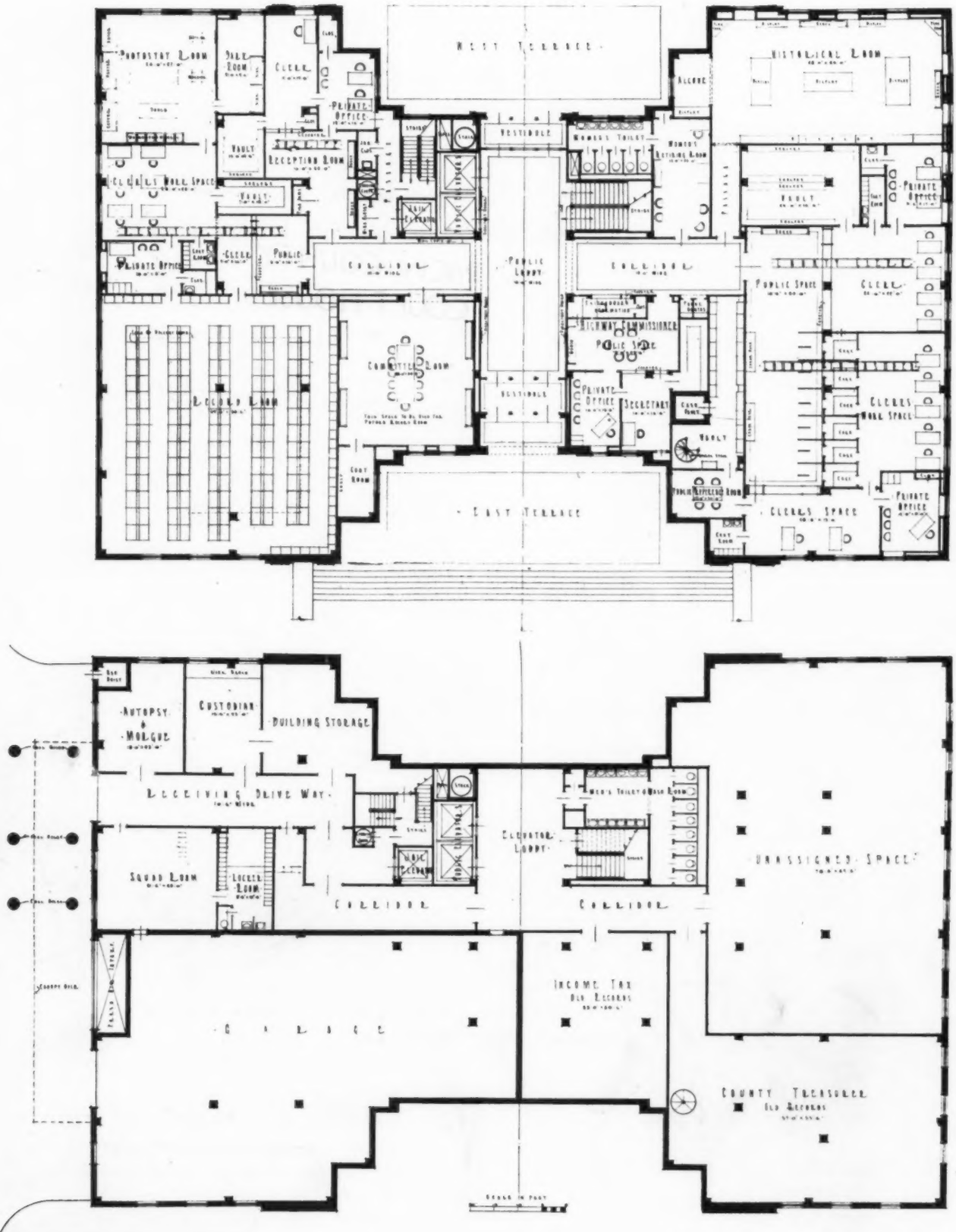
GIDEON F. EGNER MEMORIAL CHAPEL, MUHLENBERG COLLEGE, ALLENTOWN, PA. — Frank R. Watson, Edkins and Thompson, Architects.

HOUSE OF J. W. DEAN, KNOXVILLE, TENNESSEE — Barber and McMurry, Architects.

137 EAST 57TH STREET LOFT BUILDING, NEW YORK CITY — Thompson and Churchill, Architects.

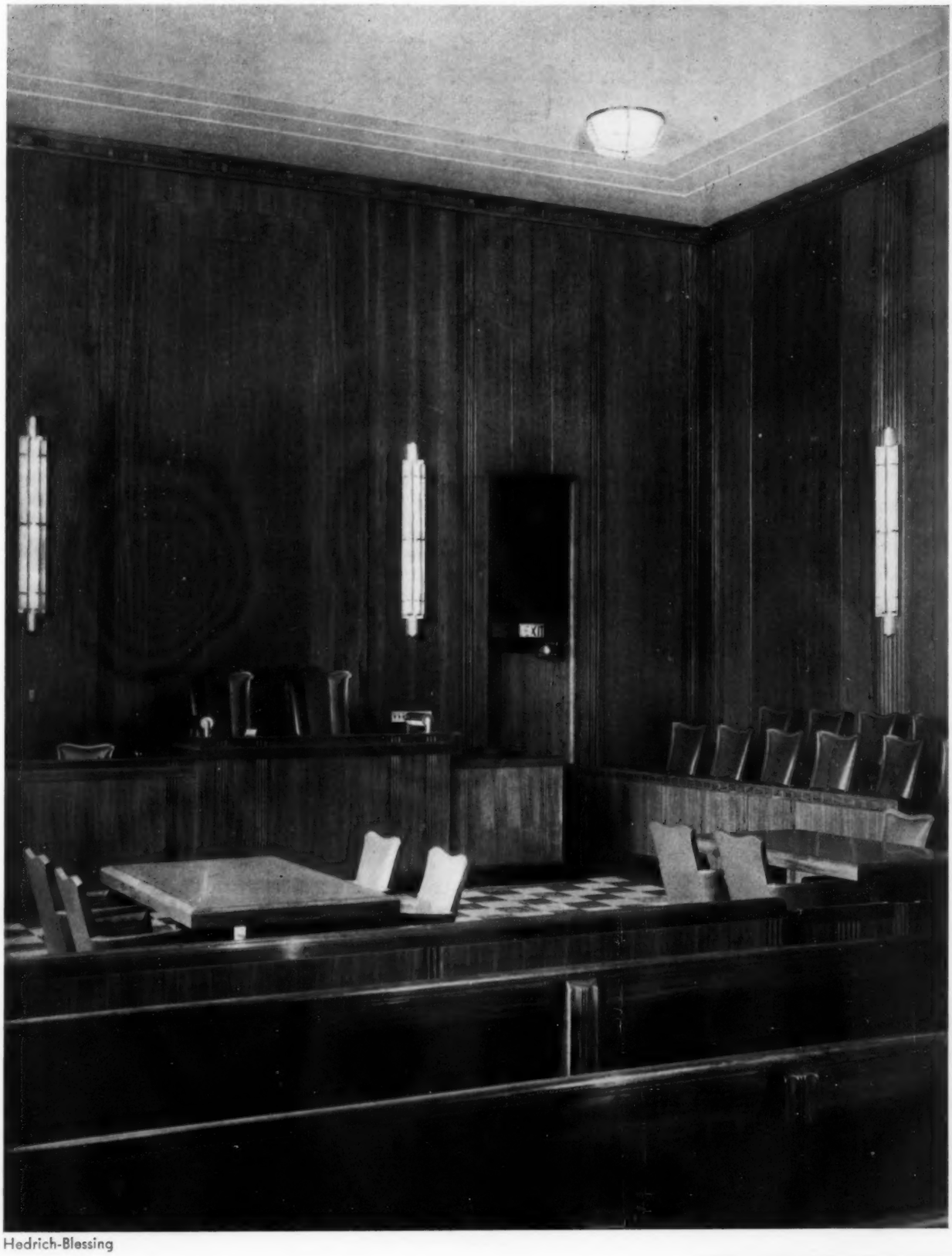
HOUSE OF W. WARREN BARBOUR, LOCUST POINT, RED BANK, NEW JERSEY — Robert M. Carrere, Architect.

BANKS-HUNTLEY OFFICE BUILDING, LOS ANGELES — John and Donald B. Parkinson, Architects.



Ground Floor and Basement Plans

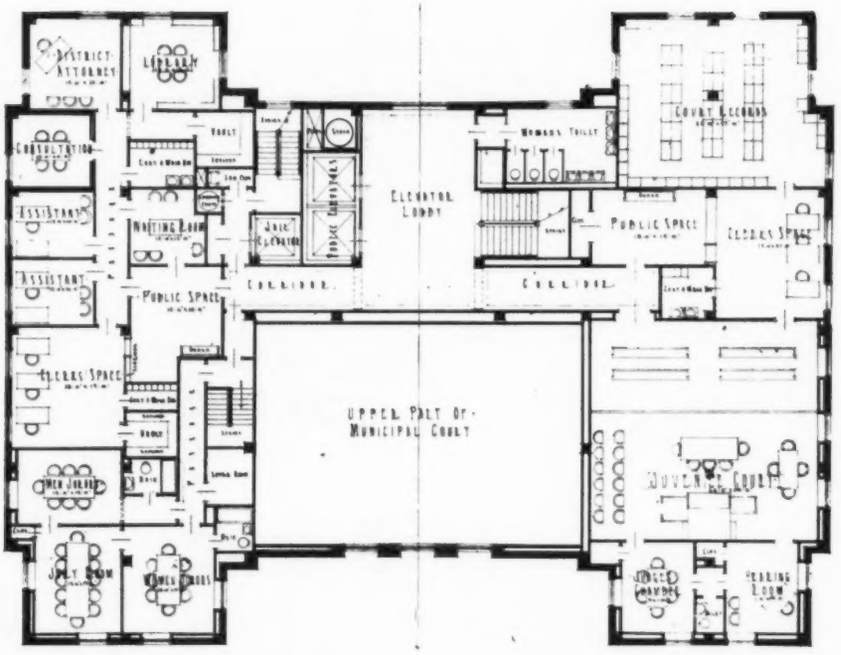
RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS



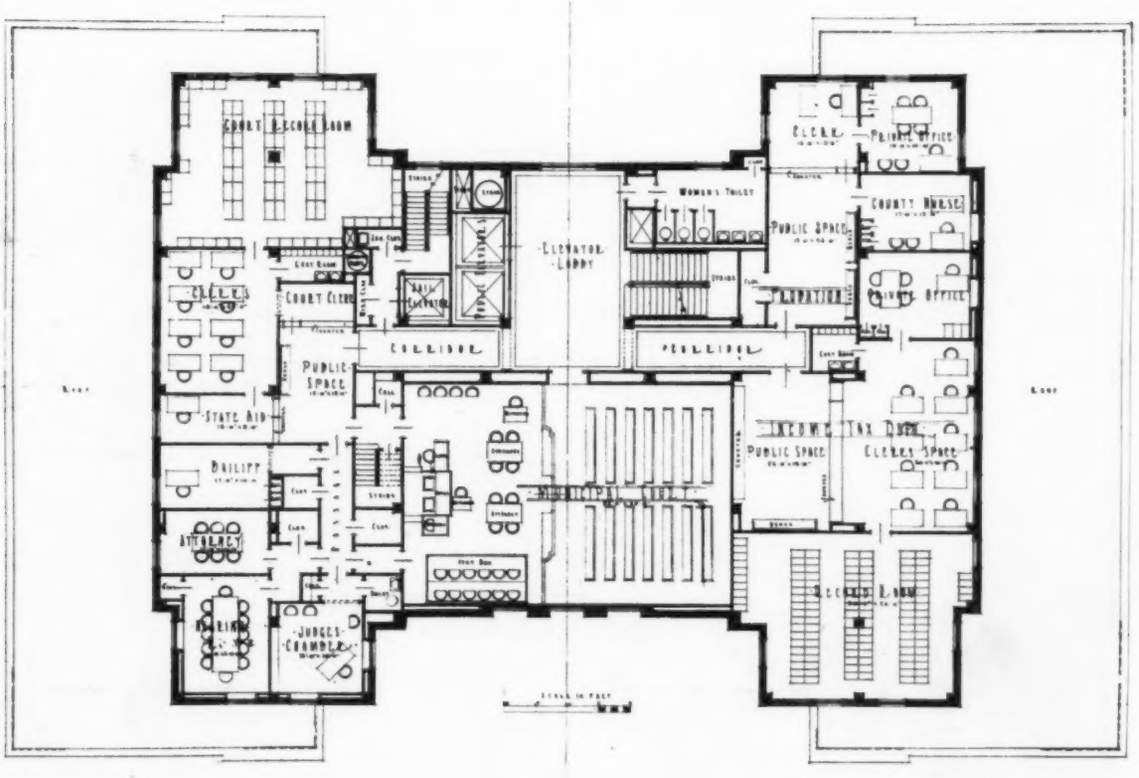
Hedrich-Blessing

Courtroom

RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS

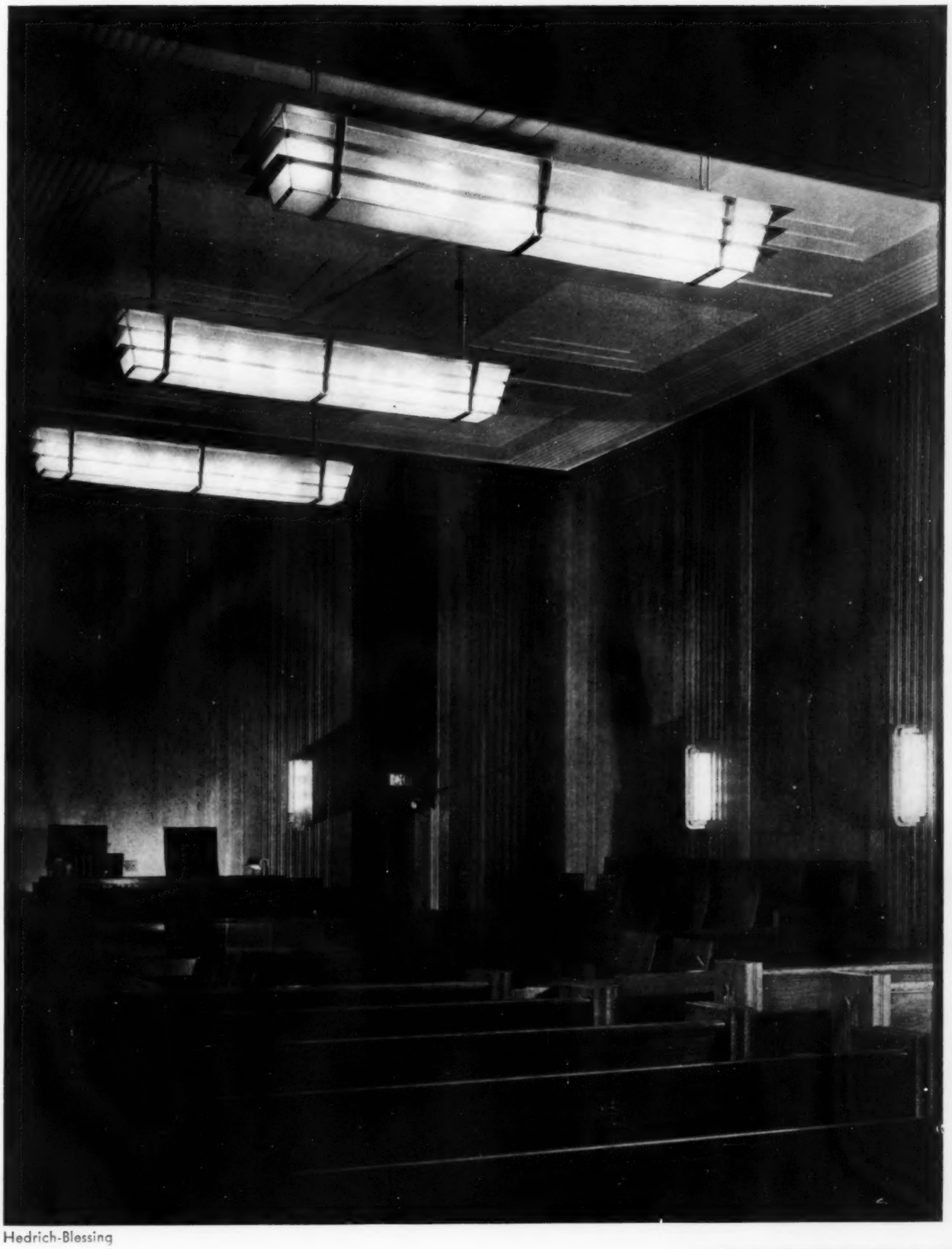


Third Floor Plan



Second Floor Plan

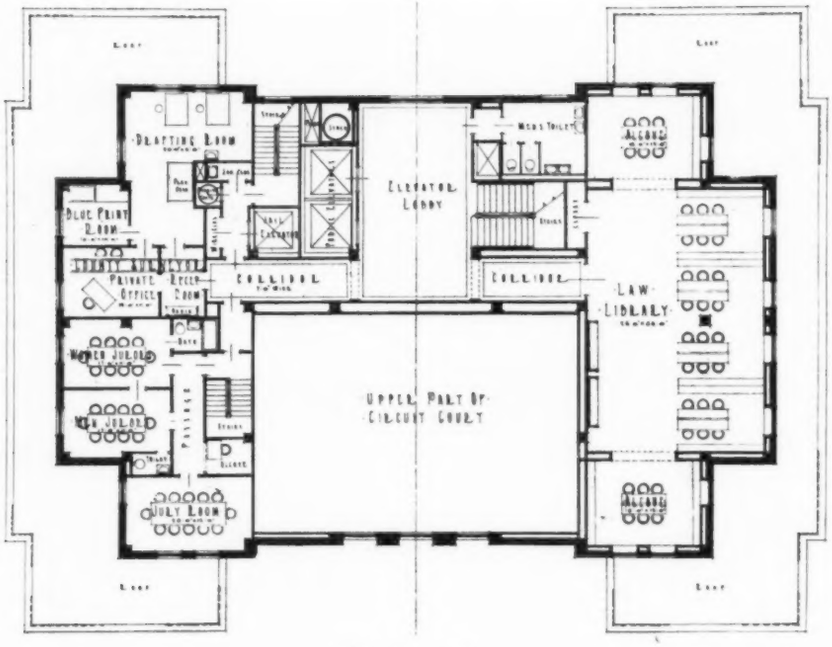
RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS



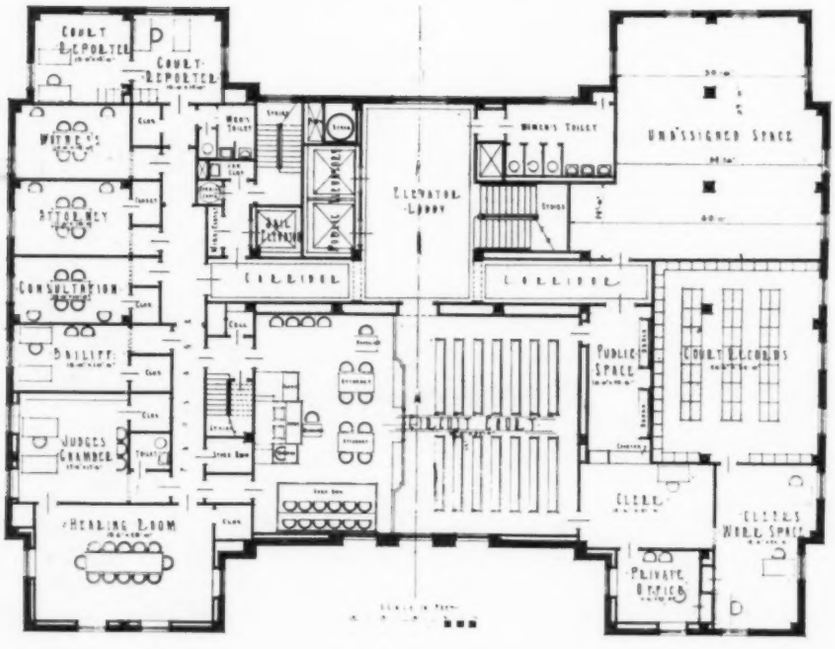
Hedrich-Blessing

Courtroom

RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS



Fifth Floor Plan



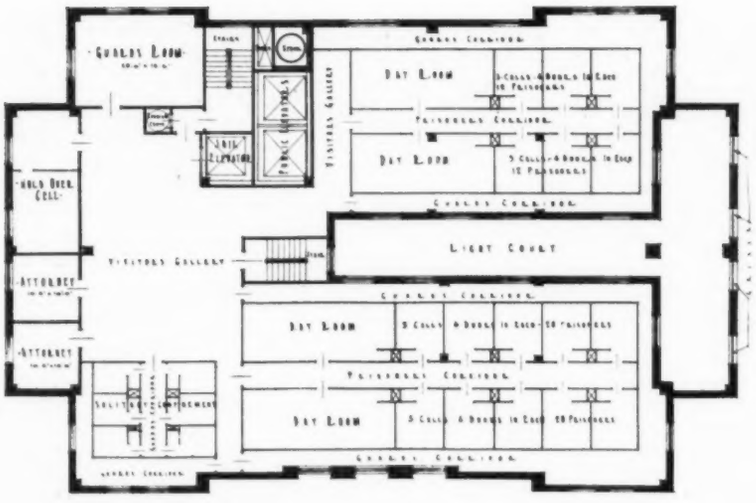
Fourth Floor Plan

RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS

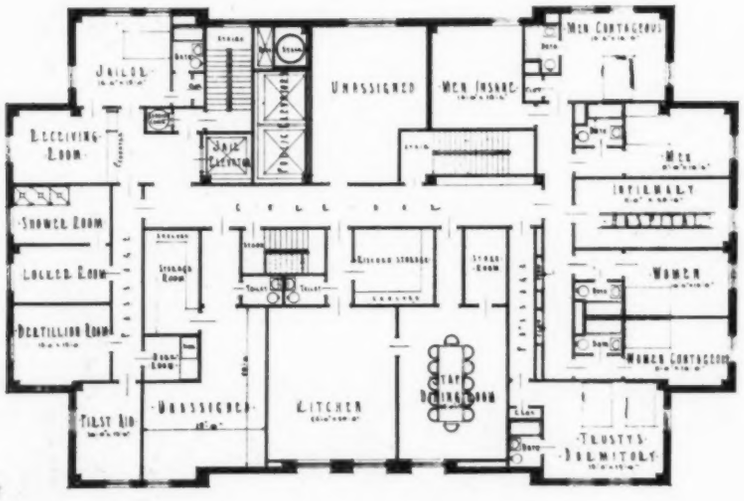
Hedrich-Blessing

Detail of Courtroom

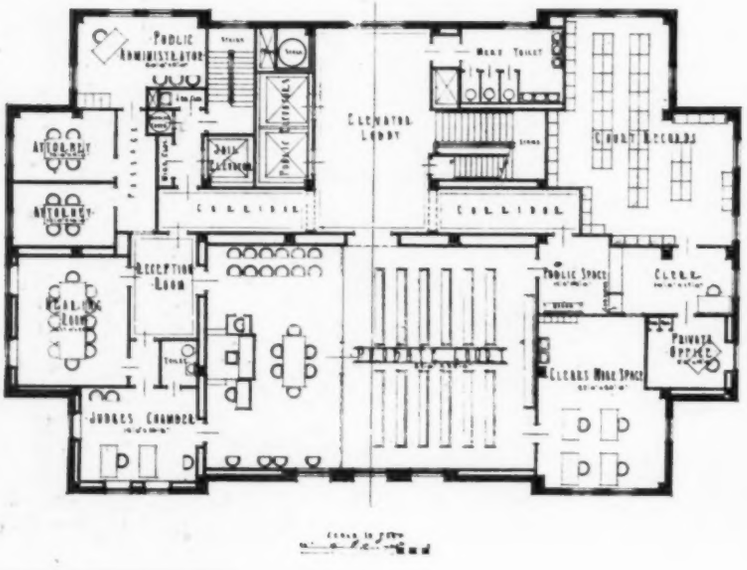
RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS



Ninth Floor Plan



Eighth Floor Plan



Seventh Floor Plan

RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS

Hedrich-Blessing

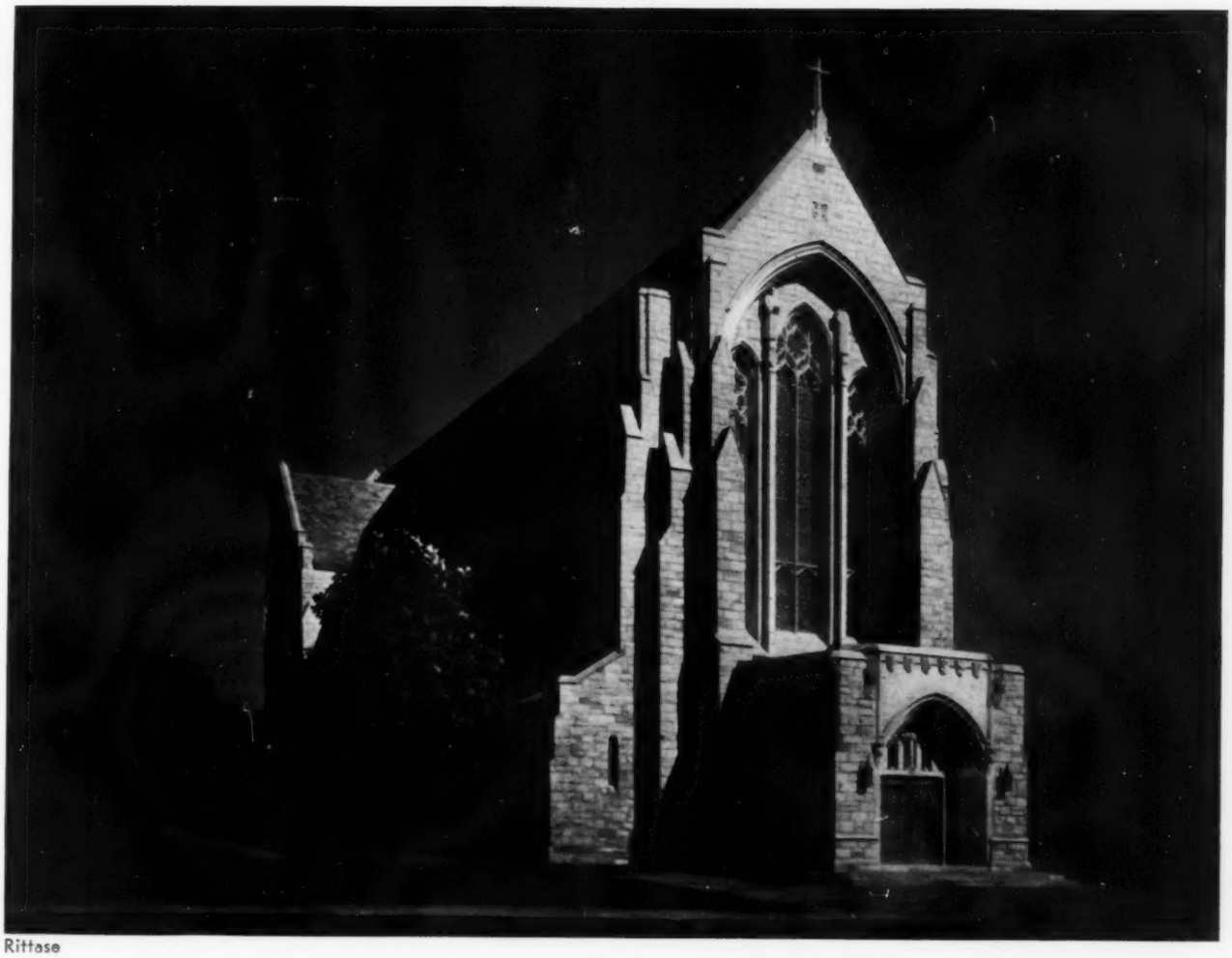
Detail of Lobby

RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS

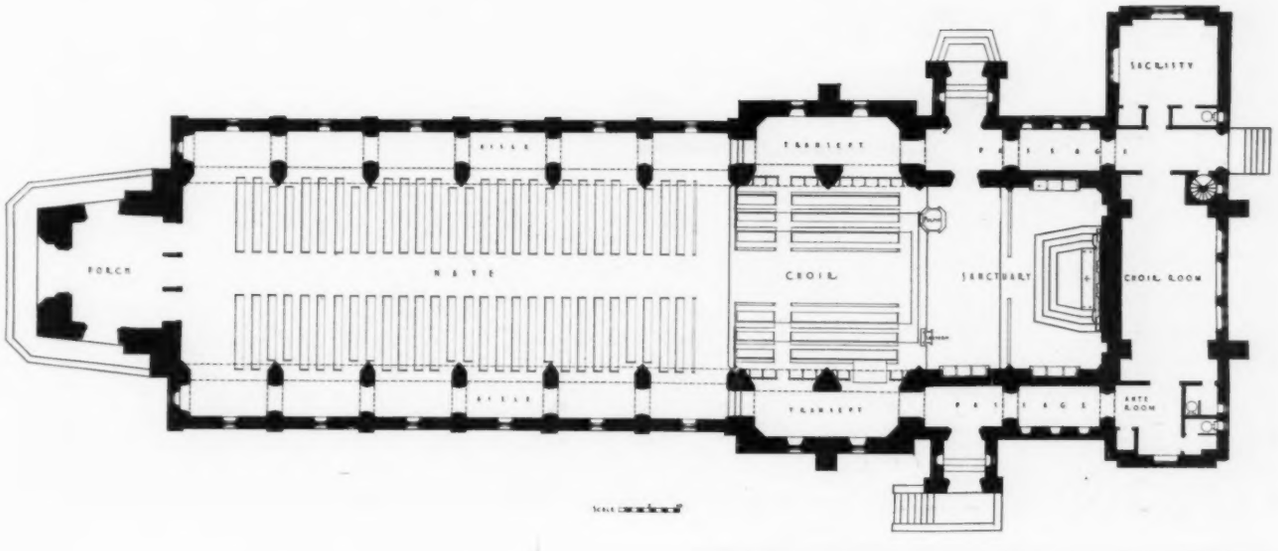
Hedrich-Blessing

Detail of Stairway

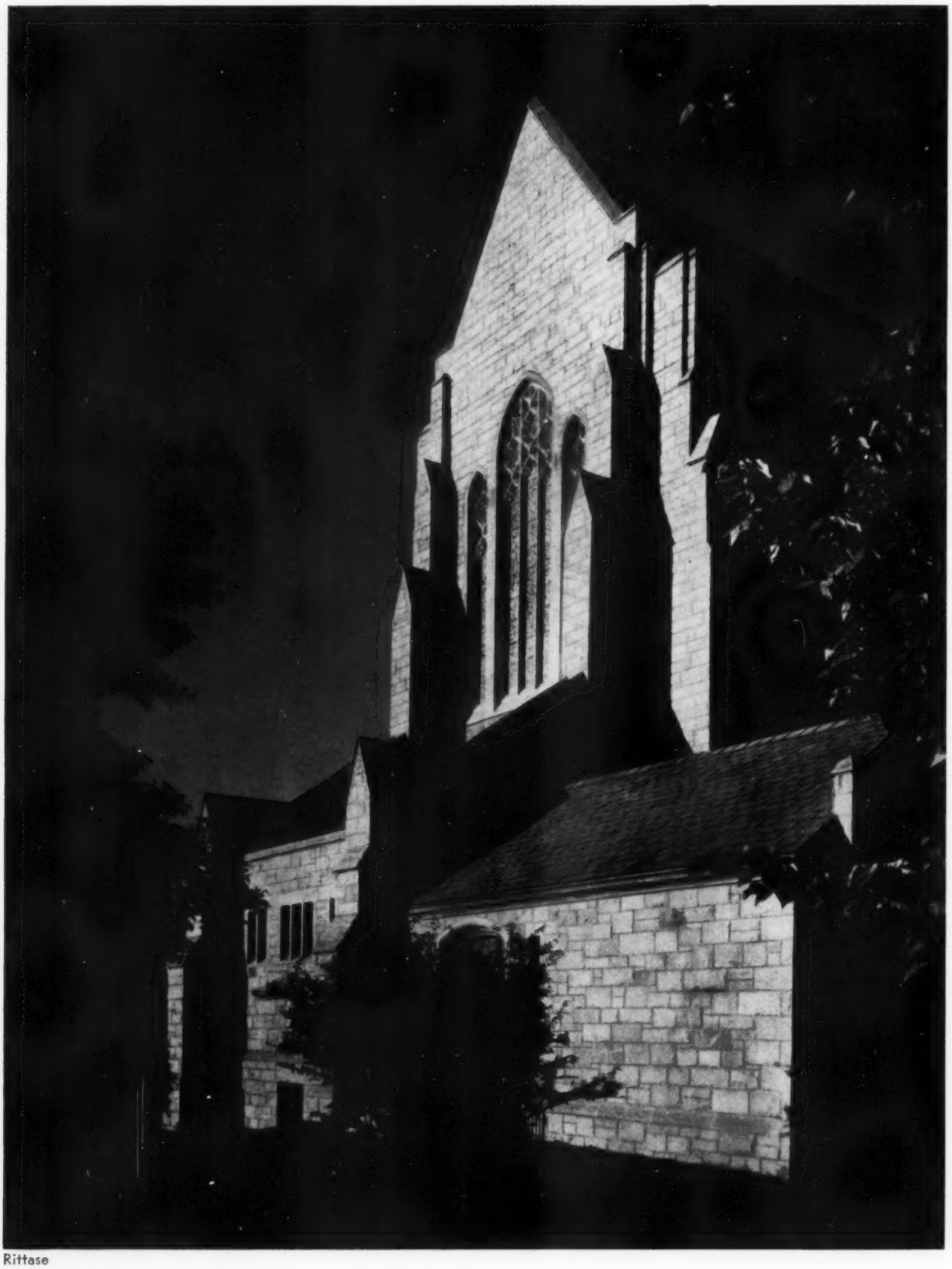
RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS



Rittase



GIDEON F. EGNER MEMORIAL CHAPEL
MUHLENBERG COLLEGE, ALLENTOWN, PA.
FRANK R. WATSON, EDKINS AND THOMPSON, ARCHITECTS

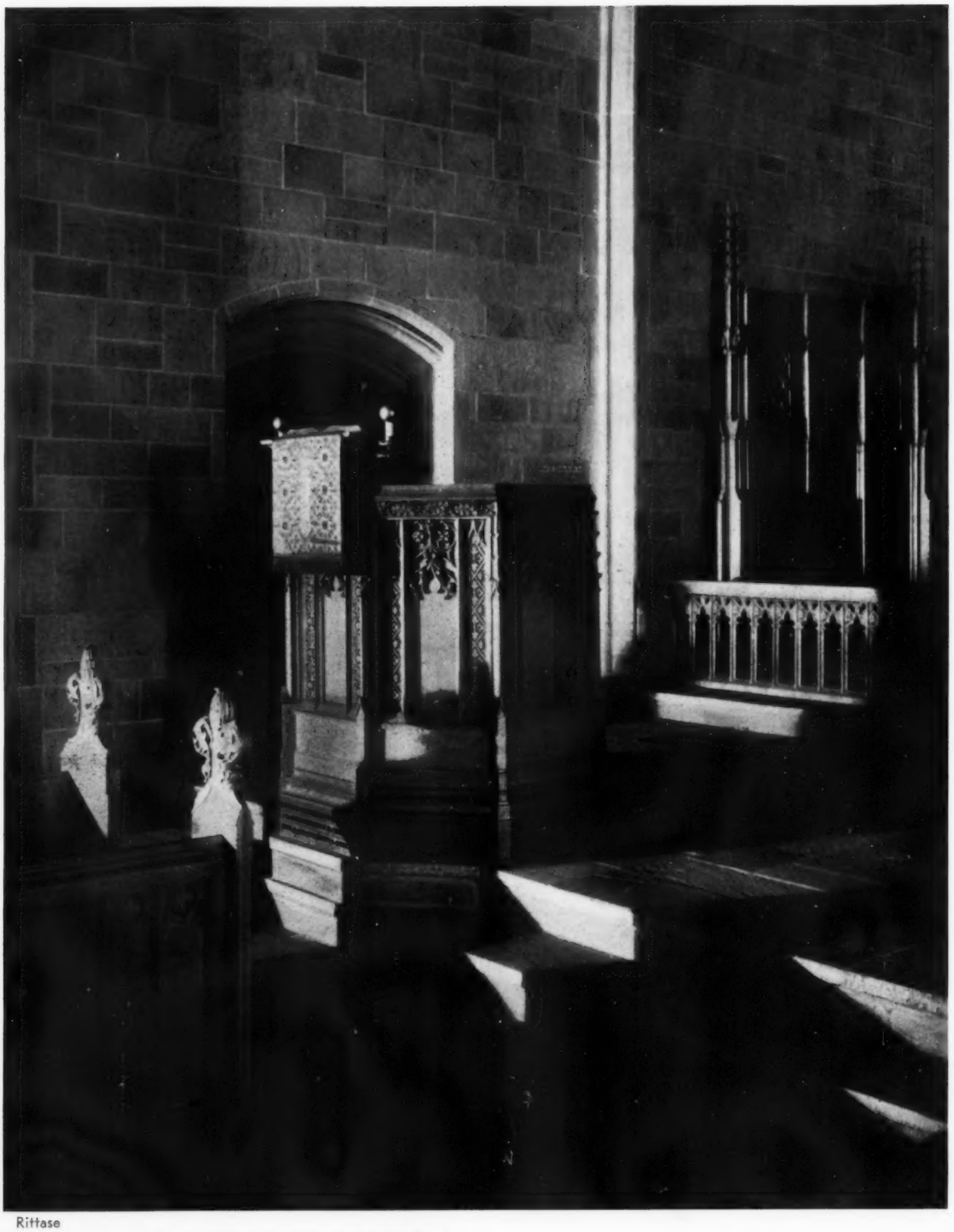


Rittase

GIDEON F. EGNER MEMORIAL CHAPEL
MUHLENBERG COLLEGE, ALLENTOWN, PA.
FRANK R. WATSON, EDKINS AND THOMPSON, ARCHITECTS

Rittase

GIDEON F. EGNER MEMORIAL CHAPEL
MUHLENBERG COLLEGE, ALLENTOWN, PA.
FRANK R. WATSON, EDKINS AND THOMPSON, ARCHITECTS



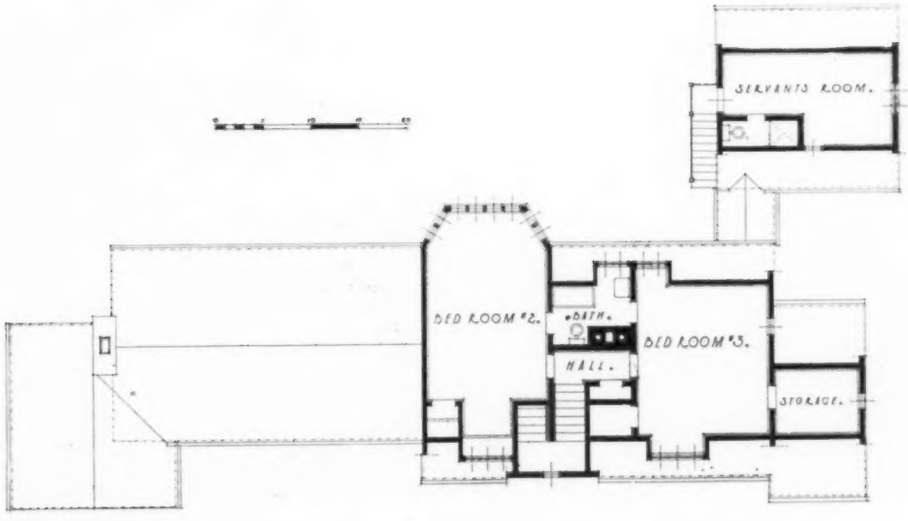
Rittase

GIDEON F. EGNER MEMORIAL CHAPEL
MUHLENBERG COLLEGE, ALLENTOWN, PA.
FRANK R. WATSON, EDKINS AND THOMPSON, ARCHITECTS

Thompson Co.

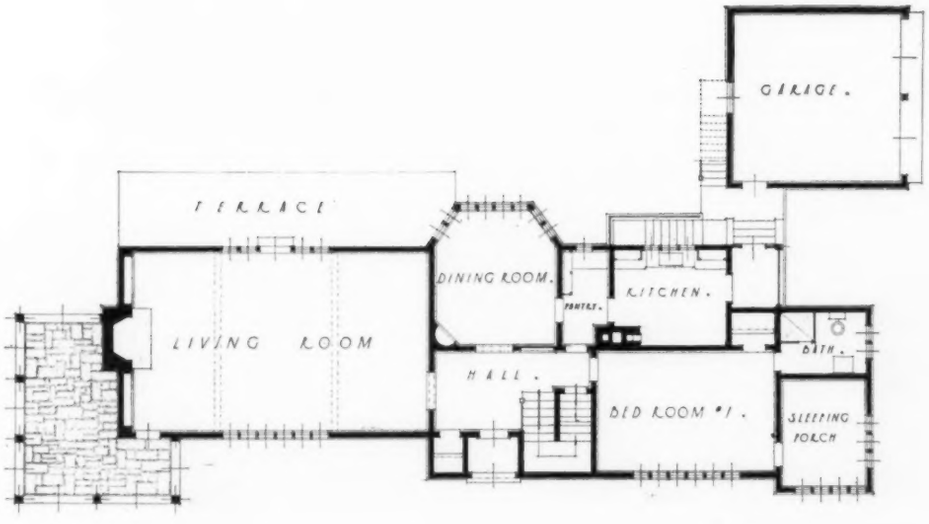
HOUSE OF J. W. DEAN
KNOXVILLE, TENN.
BARBER AND McMURRY, ARCHITECTS

Thompson Co.

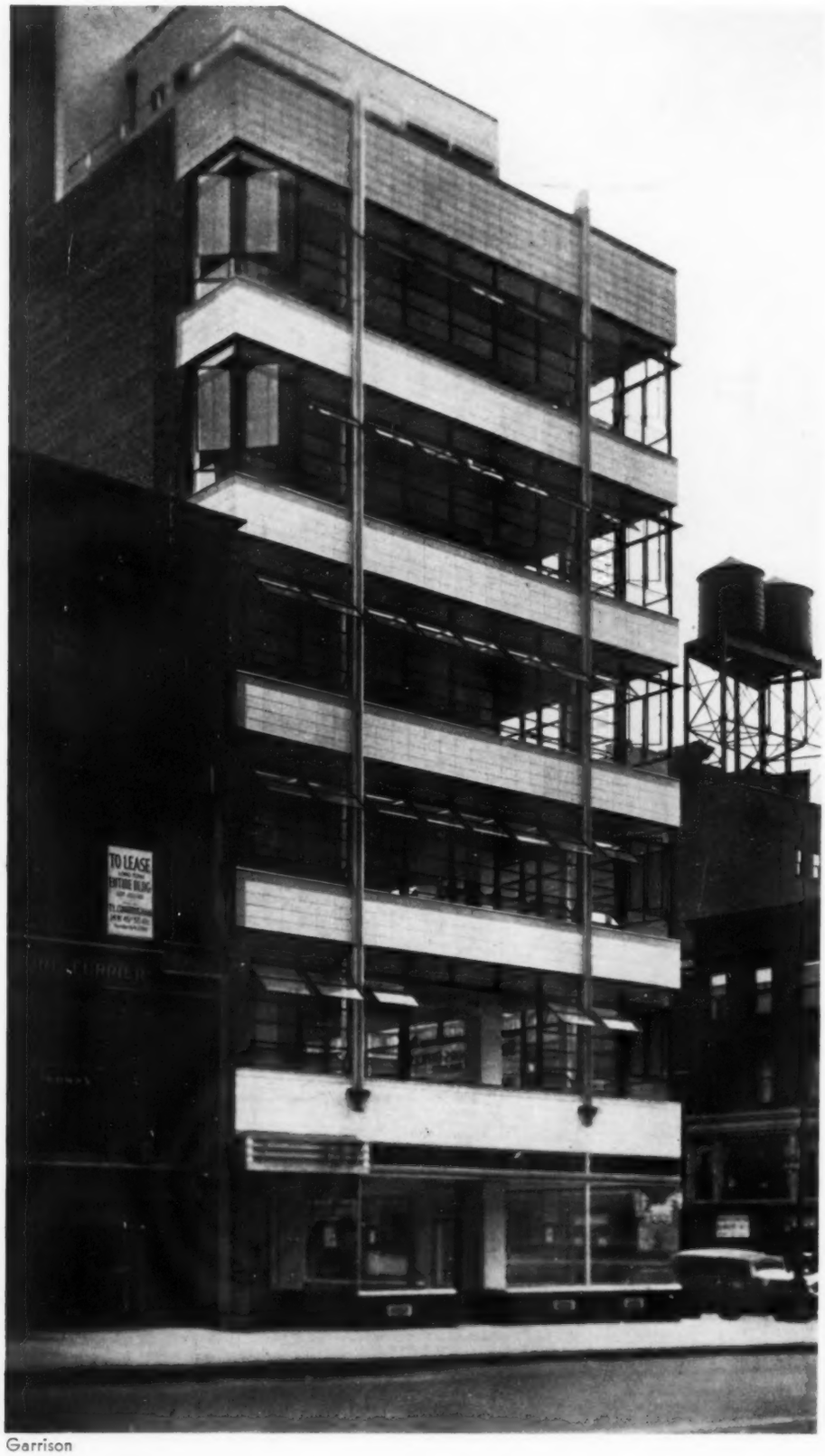


HOUSE OF J. W. DEAN
KNOXVILLE, TENN.
BARBER AND McMURRY, ARCHITECTS

Thompson Co.



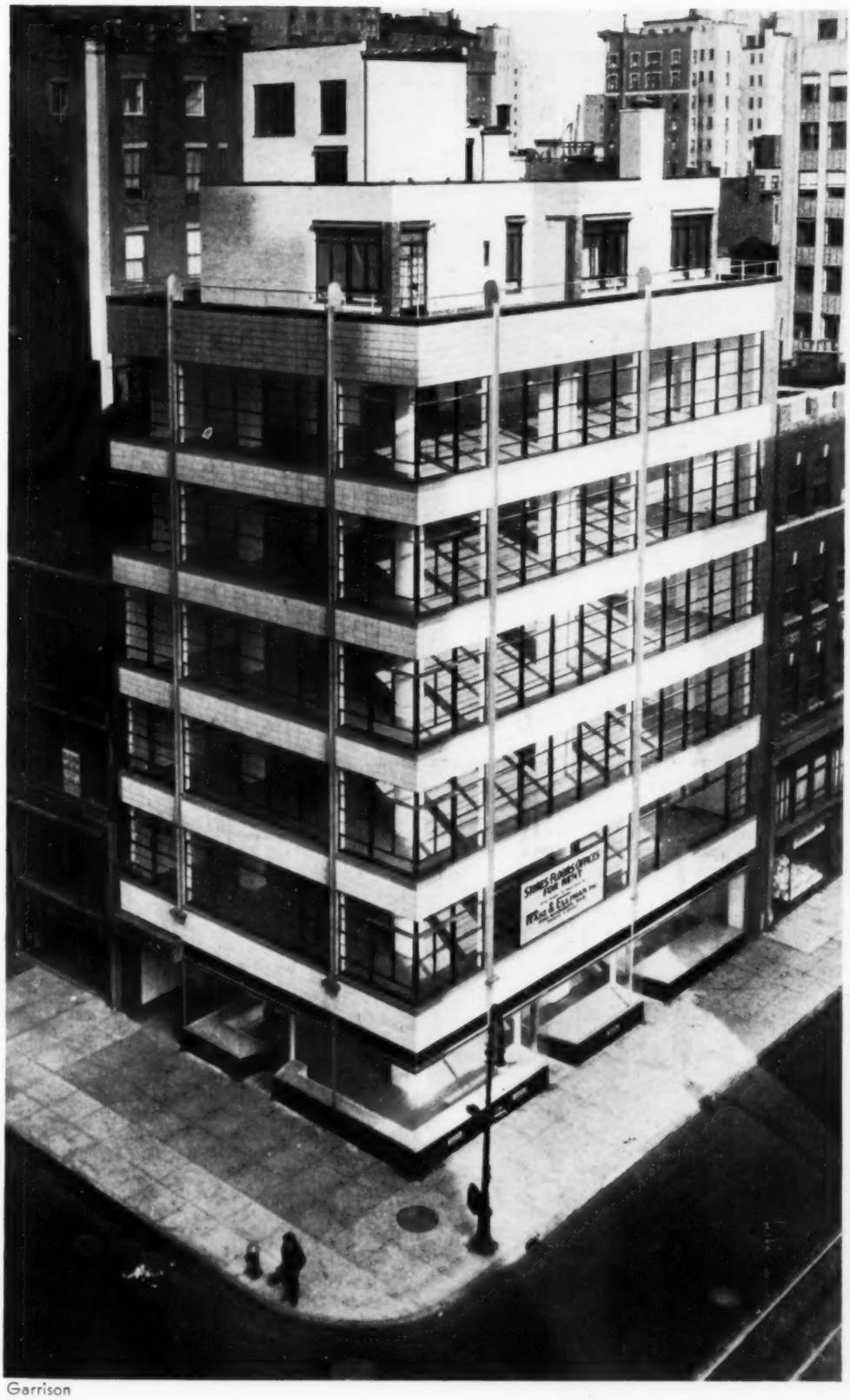
HOUSE OF J. W. DEAN
KNOXVILLE, TENN.
BARBER AND McMURRY, ARCHITECTS



Garrison

137 EAST 57TH STREET LOFT BUILDING
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

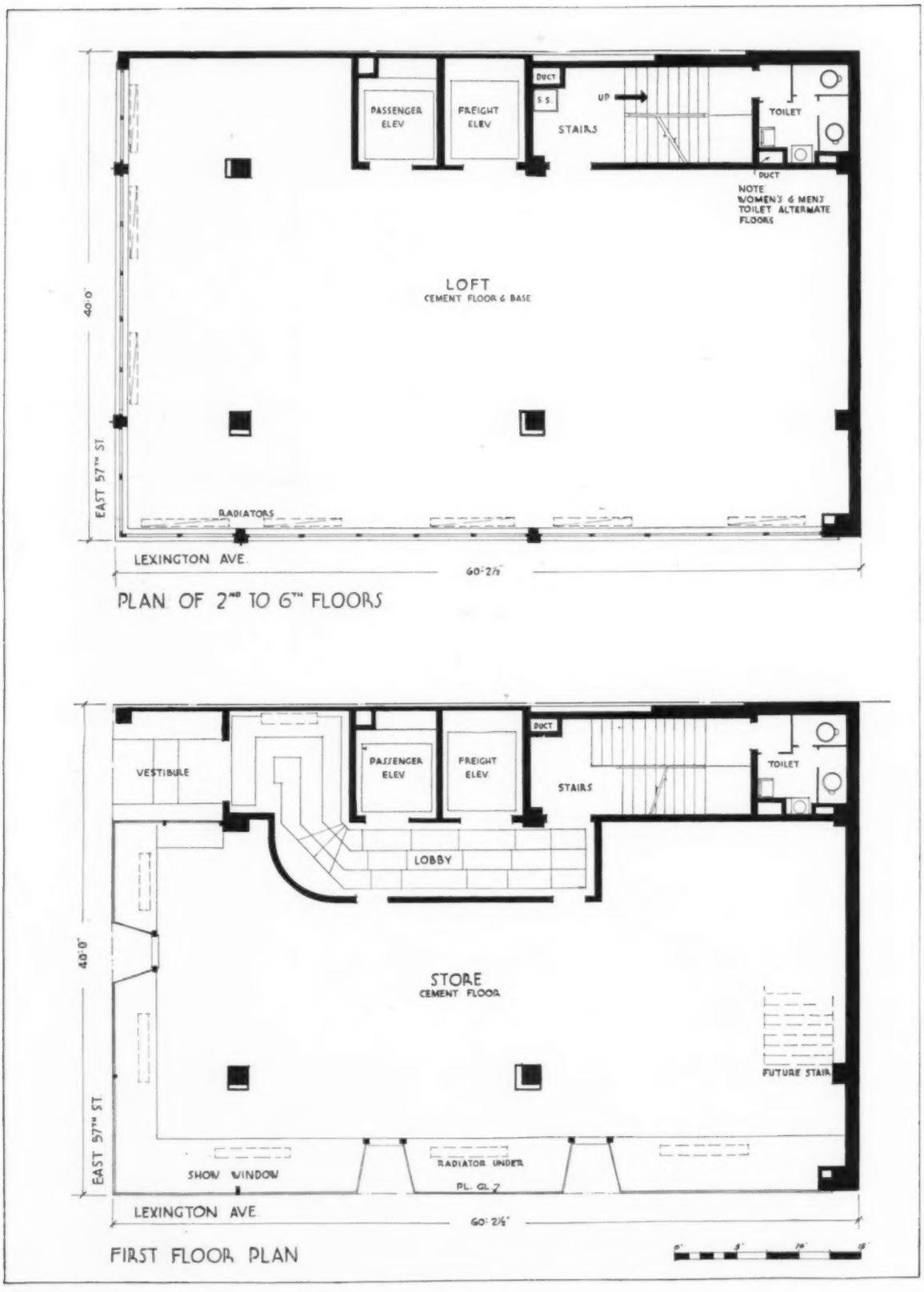
Charles Mayer, consulting engineer.



Garrison

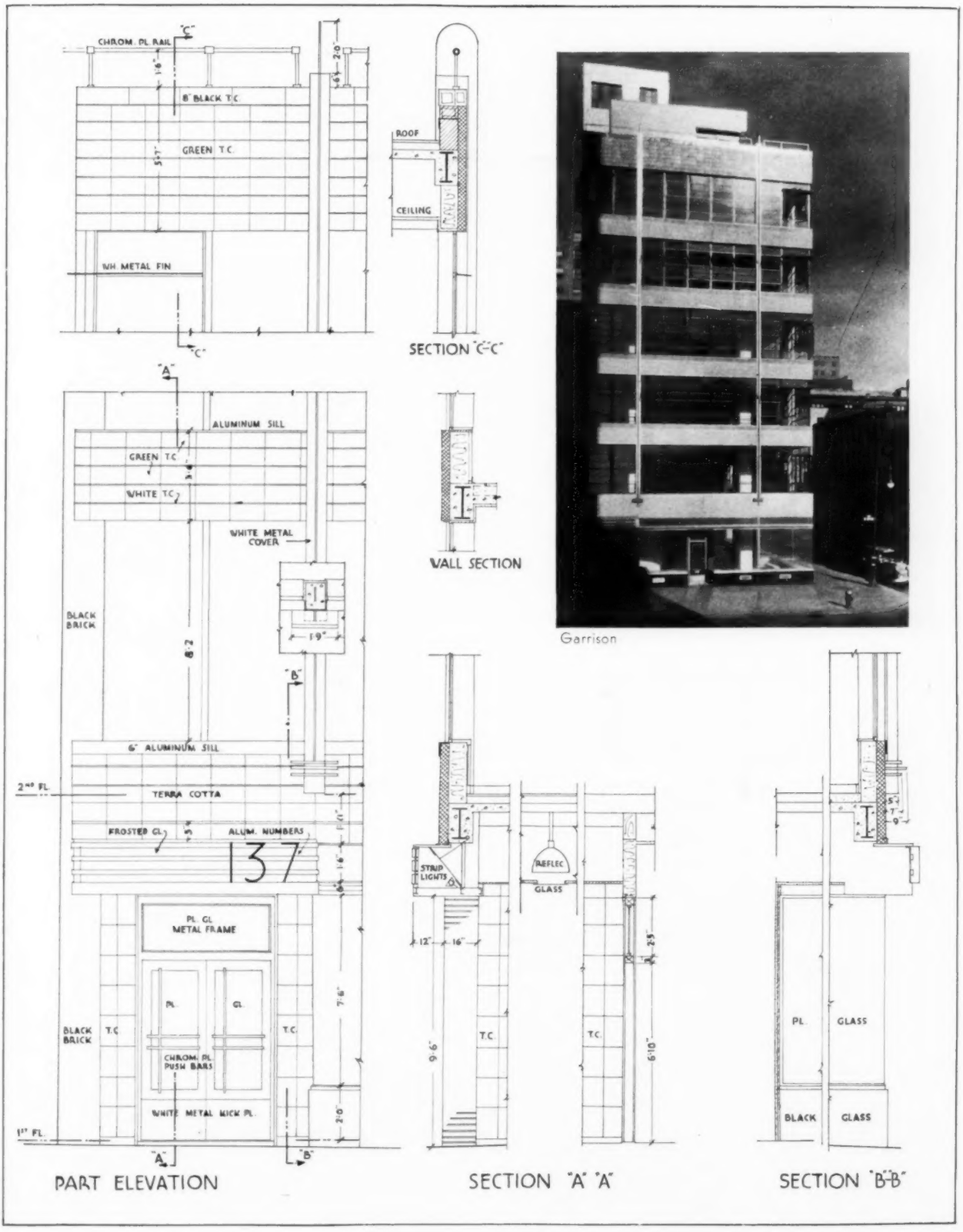
Walls are of machine-run terra cotta. The use of 4" insulated metal walls, with a concealed light-truss construction, was desired, but not permitted by the building code.

137 EAST 57TH STREET LOFT BUILDING
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS



137 EAST 57TH STREET LOFT BUILDING
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

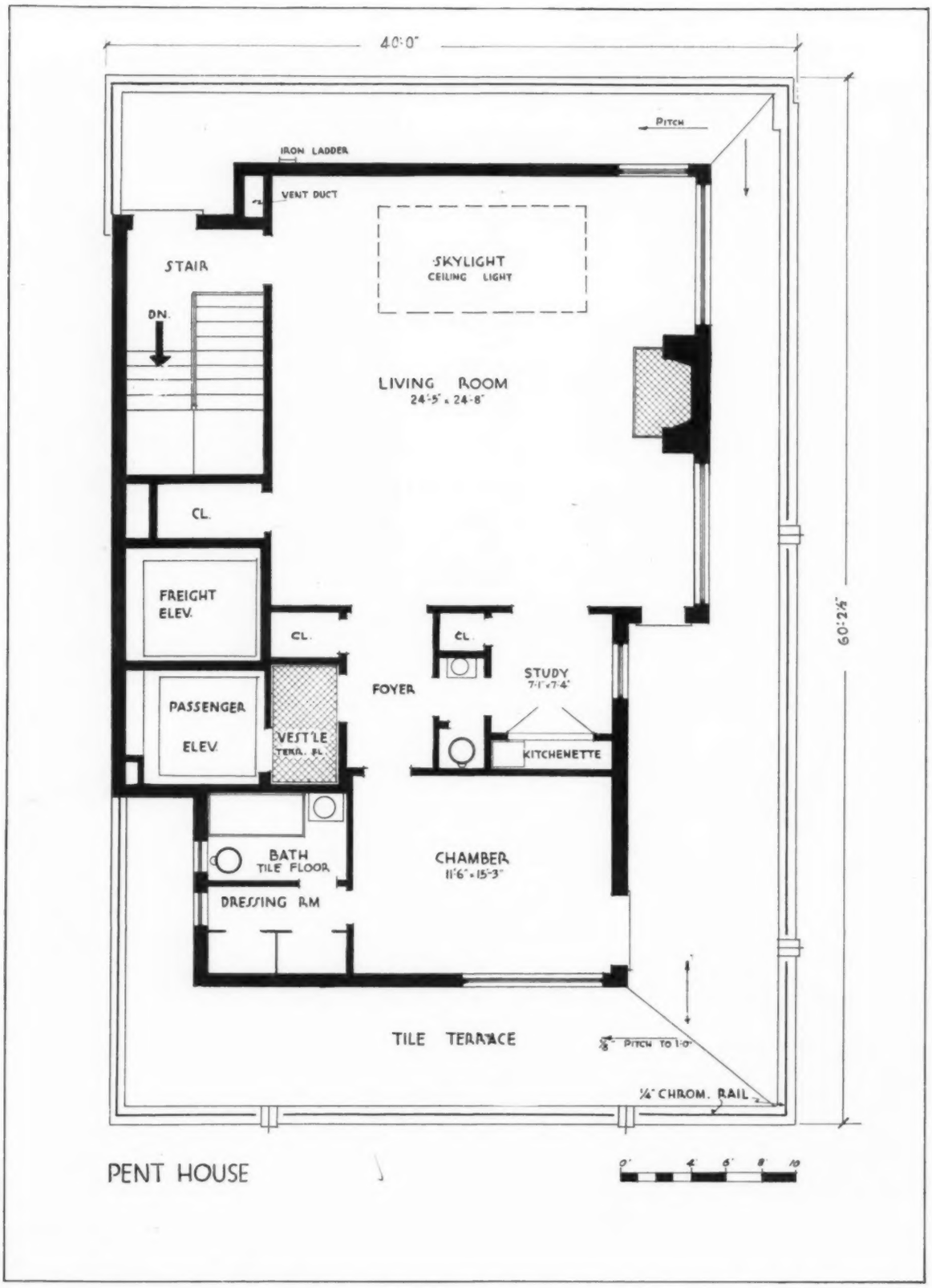
Floors are arranged for use as open lofts, art galleries, studios or offices. Cost: approximately 63½¢ a cubic foot. Cubage: 231,800 cubic feet.



Garrison

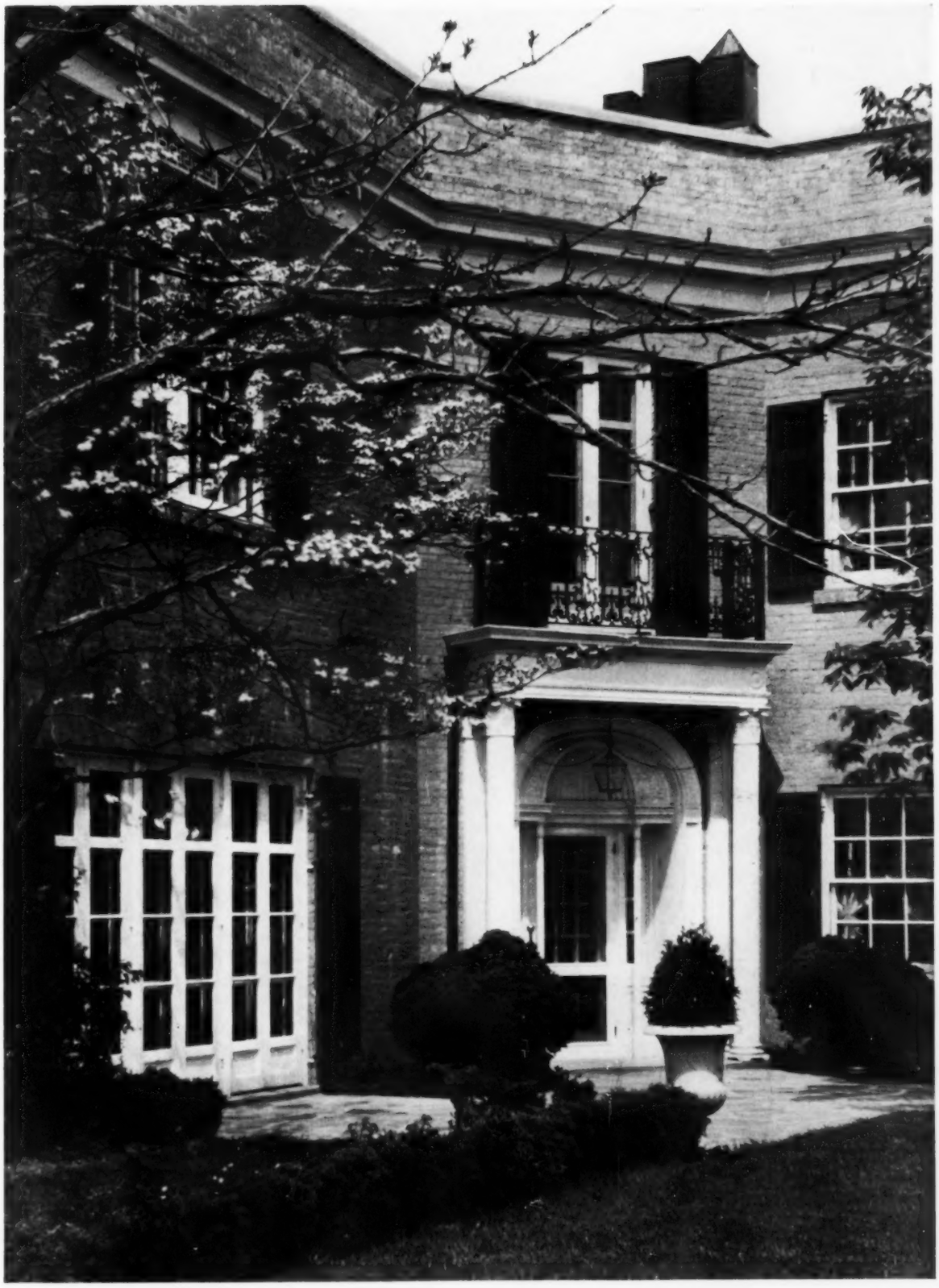
The 36" cantilever girders are continuous across the tops of the columns; outside panel and spandrel beams are carried by 5½" x ½" straps. Foundations: piles on swamp-brook bottom.

137 EAST 57TH STREET LOFT BUILDING
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

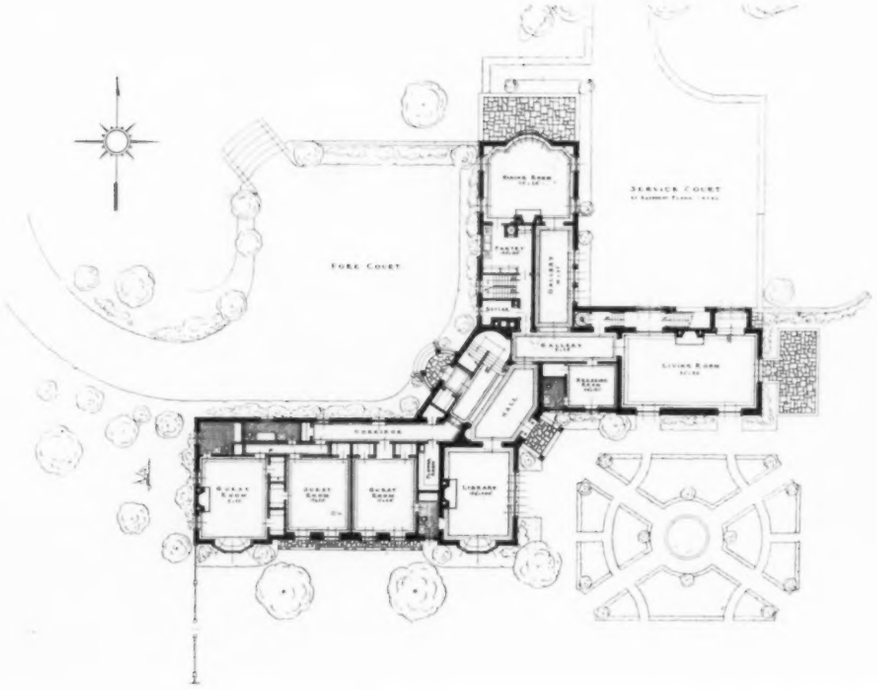


137 EAST 57TH STREET LOFT BUILDING
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

The penthouse is an apartment. The elevator car has full automatic push-button control for all-night service.



HOUSE OF W. WARREN BARBOUR
LOCUST POINT, RED BANK, NEW JERSEY
ROBERT M. CARRERE, ARCHITECT



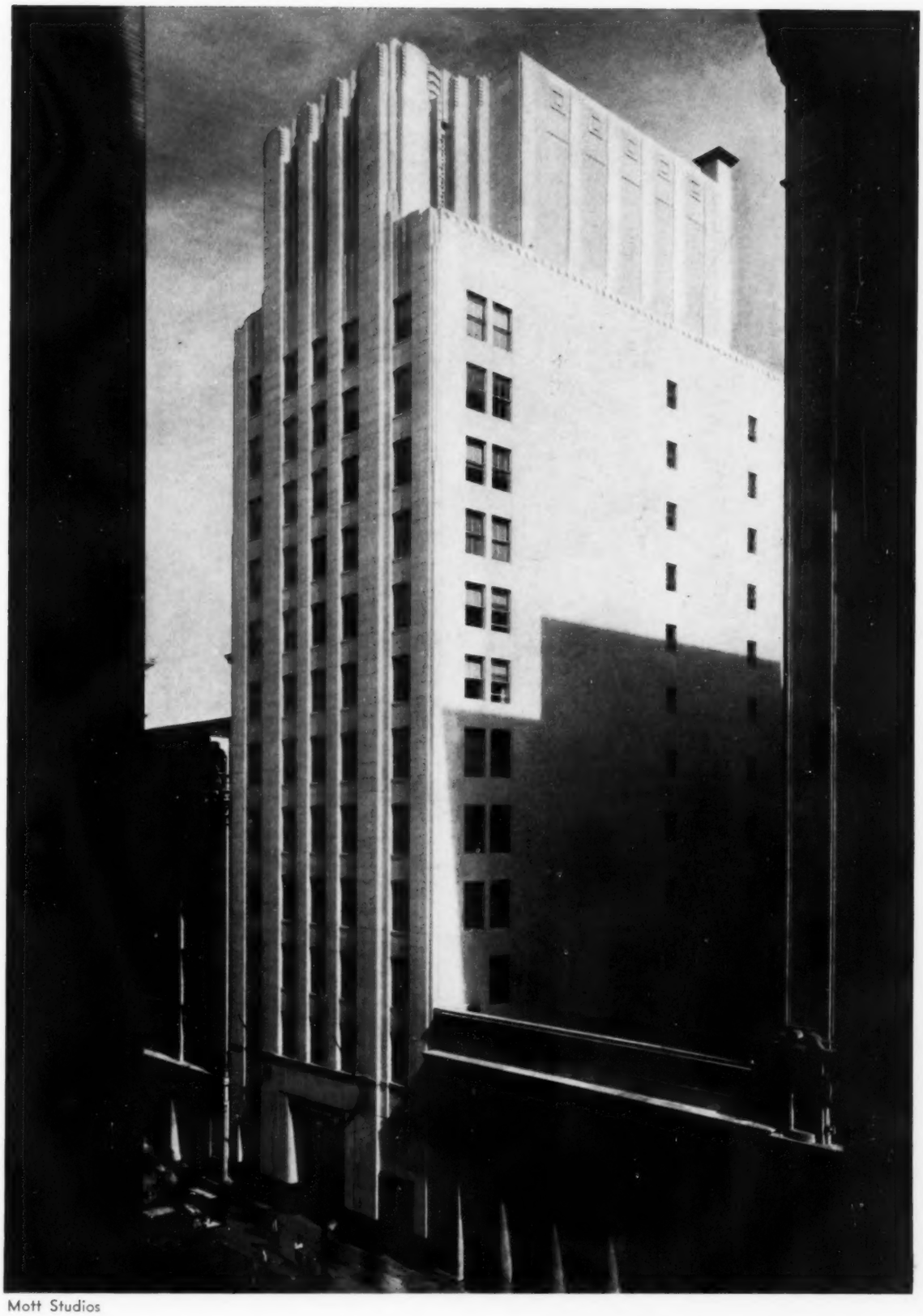
HOUSE OF W. WARREN BARBOUR
LOCUST POINT, RED BANK, NEW JERSEY
ROBERT M. CARRERE, ARCHITECT

HOUSE OF W. WARREN BARBOUR
LOCUST POINT, RED BANK, NEW JERSEY
ROBERT M. CARRERE, ARCHITECT

Mott Studios

BANKS-HUNTLEY OFFICE BUILDING
LOS ANGELES
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Street frontage of 60 feet. Façade of buff Indiana limestone with a polished Black Swedish granite base. The entrance vestibule has a ceiling of decorated modeled ceramics finished in gold and colored glazes.



Mott Studios

This building is built to the full height allowed by the Los Angeles ordinance; it has two basements. Entire rentable area is air-conditioned. Cost: 76½¢ a cubic foot.

BANKS-HUNTLEY OFFICE BUILDING
LOS ANGELES
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Mott Studios

BANKS-HUNTLEY OFFICE BUILDING
LOS ANGELES
JOHN AND DONALD B. PARKINSON, ARCHITECTS

The main elevator lobby is paved in marble mosaics and has a wainscot of alternating bands of Golden Sienna and St. Genevieve Rose, and a base of polished Black York Fossil. Cast bronze elevator doors are framed in Verde Antique and Alps Green marble.

CHICAGO MUNICIPAL AIRPORT

By PAUL GERHARDT, JR.
City Architect, Chicago

Kaufmann and Fabry

With the growth of air transportation has come the problem of providing adequate terminal accommodations together with necessary facilities for the traveling public. In planning the Administration Building for the Chicago Municipal Airport, a thorough study was made of existing conditions and the probable future needs for such an air center.

Visits were made to neighboring airports and conferences were held with a number of airport managers. Many valuable ideas were obtained from these sources, as well as from a study of the Lehigh Airport Competition.

The limited height of airport buildings, a governing factor in the design, suggested the use of monolithic concrete. Another consideration in favor of monolithic concrete was that greater economies could be secured than with the ordinary type of wall construction.

Both the east and west elevations of the building, which are on the street and field sides, have received exactly the same architectural treatment. The exterior walls have large unbroken glass areas; aluminum sash and mullions are used for the window trim.

The main entrance has been finished in jet black *Vitrolite* with black enamel wood doors, in contrast with the light-colored concrete walls. Attached to the *Vitrolite* above the doors is an ornament made of stainless steel. The ornament has the seal of the city of Chicago for its center, flanked on each side by the spread wings taken from the flying corps insignia. The letters above the second story windows are also of stainless steel and stand out in relief from the wall. Floodlights have been recessed in the coping on the one-story wings which illuminate the approaches to the building from the field and street sides.

The Ground Floor Plan

The waiting room is 40 by 60 feet in plan, two stories in height. The floor has been covered with Alabama marble. Walls are finished with a smooth plaster painted a pastel shade of tan. Fluted pilasters, terminating in a cornice, break the smooth wall surface at intervals. Over each pilaster is the flying corps insignia in plaster relief.

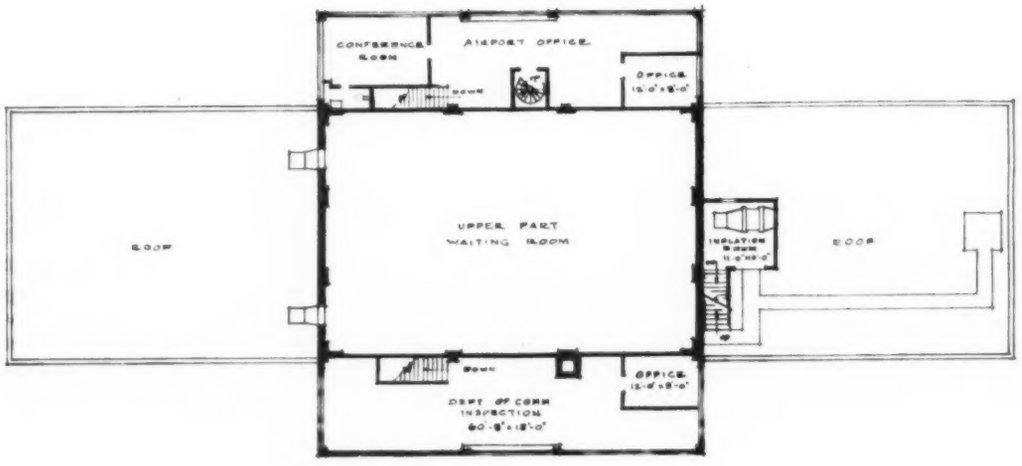
Lighting fixtures, designed to represent aerial bombs, have three fins made of polished chrome nickel attached to the sides. Bent wood furniture has been used in the waiting room in order to give more the appearance of a hotel lobby than a typical passenger station waiting room. Two large maps of the United States, set in polished chrome nickel frames with glass facings, are on one wall of the waiting room. On one map is plotted the passenger air routes. The other is a weather map showing weather conditions for all sections of the country and is maintained by the United States Weather Bureau.

In addition to the waiting room, the first floor has a restaurant, two telegraph stands, a first-aid room and a ticket and baggage office. The ticket and baggage office and the telegraph stands open directly on the waiting room and have been finished with marble counters. Space has been allotted on this floor for the accommodation of the Airways Division of the Department of Commerce and the United States Weather Bureau.

A gas heating unit, selected because it requires less chimney height than any other type, was installed in the part basement.

The Second Floor Plan

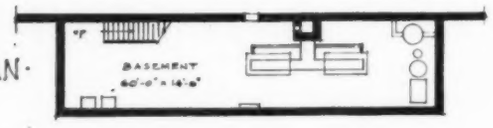
On the second floor to the east the Inspection Division of the Department of Commerce will have



·SECOND FLOOR PLAN·

·FIRST FLOOR PLAN·

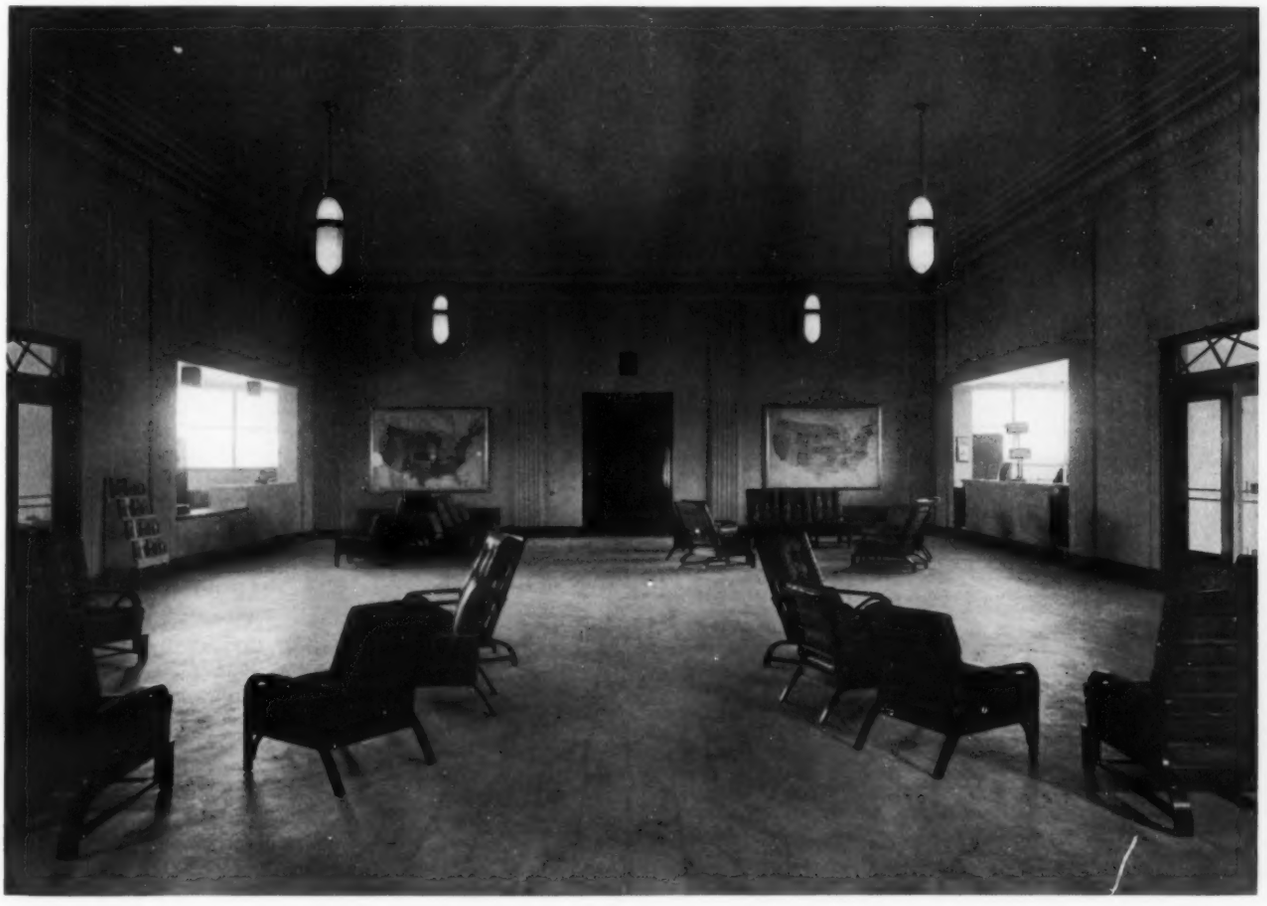
·BASEMENT PLAN·



ADMINISTRATION BUILDING OF THE CHICAGO MUNICIPAL AIRPORT
PAUL GERHARDT, JR., CITY ARCHITECT

Kaufmann and Fabry

Street Façade



Waiting Room — Field Entrance at Left, Street Entrance at Right

ADMINISTRATION BUILDING OF THE CHICAGO MUNICIPAL AIRPORT
PAUL GERHARDT, JR., CITY ARCHITECT

Detail of Entrance
ADMINISTRATION BUILDING, CHICAGO AIRPORT
PAUL GERHARDT, JR., CITY ARCHITECT

offices. On the west or field side of the building is the office of the Airport Supervisor.

The entire field is visible from this office. Directly overhead on the roof is located a control tower, constructed entirely, including the roof, of glass set in a metal frame. An attendant will be always on duty in the tower and will have full control of the field, supervising such activities as the landing of incoming planes, taking off of departing planes, and lighting the field at night. The tower is equipped for receiving and broadcasting radio messages a distance of twenty miles. Incoming planes will radio their position and expected time of arrival. The attendant will notify the pilot of landing conditions, ceiling and visibility at the airport.

The Concrete Wall Construction

The concrete walls were desired to be finished with a smooth surface free from form marks. For this purpose a ⅛" fiber-board form liner was specified. (Best results are obtainable if the forms are protected during construction from both the sun and the rain.)

A slightly over-sanded mix was used for the concrete. The proportions of materials for the mix were approximately 1 part of cement to 2½ parts of sand to 3½ parts of coarse aggregate. The water content was limited to 5½ gallons of water per sack of cement to insure the quality of concrete necessary to stand the severe climate. Six pounds of lime were added to the mix to increase its workability and to make the walls lighter in color. A six gallon water-cement ratio was specified for the structural concrete used in the balance of the structure.

Mechanical vibration of the forms was specified to insure a dense impervious concrete for the exterior walls. The mechanical vibration used by the contractor was too severe because of the thin wall section, and it was supplanted by two workmen who tapped the forms with hammers during the placing of the concrete. The results obtained from this method proved entirely satisfactory in that practically no patching was necessary when the forms were removed. The exterior walls are 12" thick below the long window sills, and 8" thick above the sash including the parapet.

Forms were left in place for a minimum of ten days, the window sills being protected during that period with damp canvas. The concrete was permitted to dry thoroughly after the forms were removed. The surface was then neutralized with a zinc sulphate solution and allowed to dry. Two coats of *Minwax* were then applied for a protective coating.

A paint mixture of one part cement gray, one part white and one part cream color, was selected. The resulting shade matched the color of the concrete in the wall and it is difficult to tell that a protective paint coat has been used.

The Flying Field Arrangements

Previous to the opening of this building passengers arrived at and departed from the hangars of the eight operating companies. This was more or less confusing to the travelers, especially when friends were meeting them. Now all passenger planes arrive at and depart from the Administration Building.

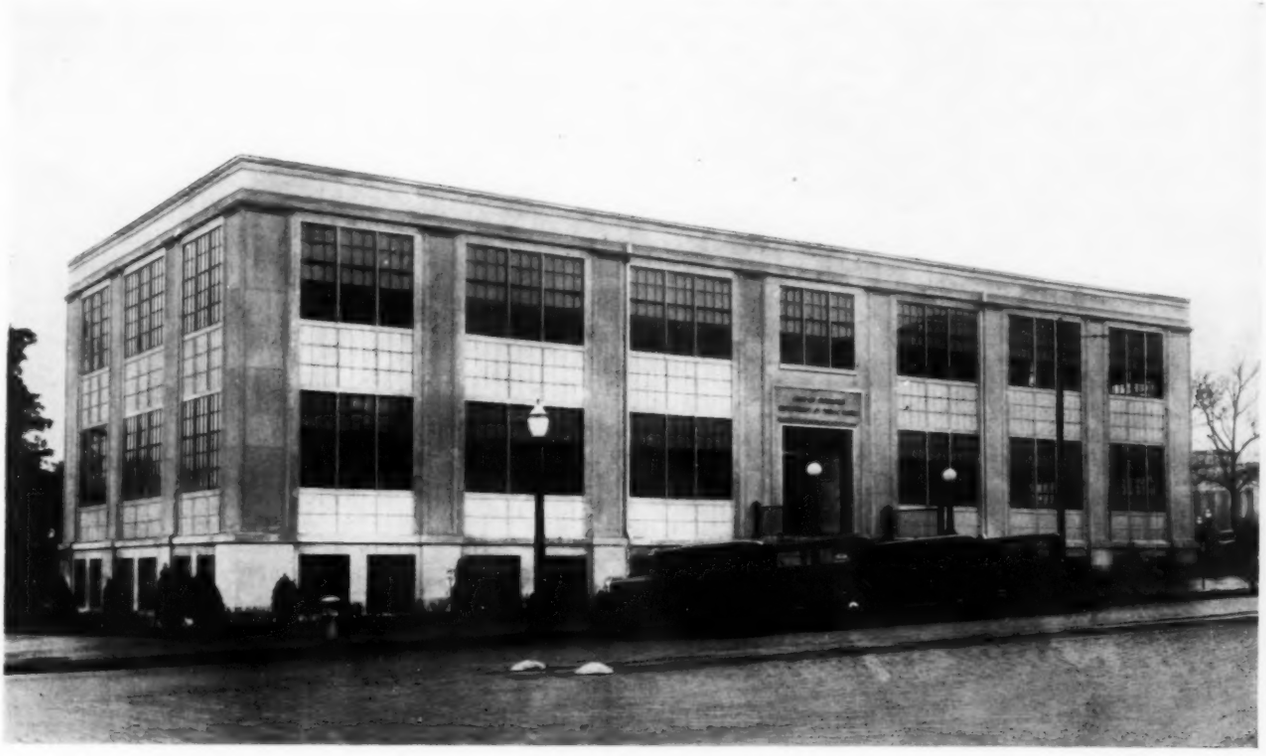
An L-shaped concrete taxi-way extends along two sides of the field and connects the hangars with the Administration Building. The taxi-way is 6,030 feet in length with 2,500 feet of it 150 feet wide and the balance 100 feet wide.

Costs

The building was designed in the office of the City Architect of Chicago. The volume is 203,000 cubic feet. The total cost of the building was $76,000.

AN ALL-METAL OFFICE BUILDING IN RICHMOND

BUILT AT A COST OF 19.1¢ A CUBIC FOOT — By JAMES BOLTON, DEPARTMENT OF PUBLIC WORKS



The recently completed office building of the Department of Public Works of Richmond, Virginia, by the use of new forms and materials, has eliminated heavy curtain walls, reduced column and girder size, speeded up erection and made possible the occupancy of the building in a relatively short time. If at some subsequent date, as seems highly possible, it will be necessary to tear down the building and re-erect it on a different site, this can be done with a minimum wastage of material. The high salvage value of the metal forms and the ease and speed with which they could be assembled and disassembled led to the adoption and construction of an all-metal building.

Late in 1930 the Department of Public Works was notified that it would have to vacate its offices in the City Hall to make room for expansion of another division. In looking elsewhere for available office and laboratory space, seventeen different projects were considered. These included renting space in nearby office buildings, buying and remodeling conveniently located buildings, rehabilitating city-owned buildings, or erecting the department's own building on a city-owned lot.

When the plans for the present all metal structure were completed and its cost compared with the cost of the sixteen other propositions, it was found to be the most desirable not only from a financial standpoint, but from the standpoint of usefulness. The annual interest and redemption on the capital outlay, based on a complete amortization in six years, were less on this building than on buildings which could be purchased; in fact, they were even lower than the cost of reconditioning city-owned buildings or the cost of renting available office and laboratory space.

In preparing plans, it was kept in mind that it would be necessary to build a new city hall as soon as economic conditions permit. The structure, therefore, was designed to take care of the space requirements of the department for a period of between five and ten years. Since the anticipated term of occupancy is so short, it was essential to consider the salvage value of the building materials.

This aluminum building was designed to meet the following requirements:

1. Low cost of construction.
2. Occupancy of 5 to 10 years.
3. High salvage value of materials.

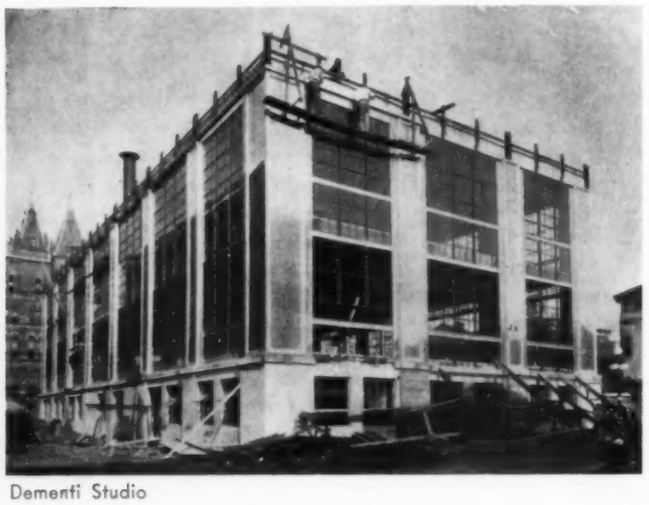
Of 17 projects considered, this scheme was selected as the most economical and useful.

The Plan

The building is rectangular in shape, its frontage of 116 feet being determined by the amount of north light needed for the drafting room; it is 50

PROGRESS — SEPTEMBER 25, 1931

PROGRESS — SEPTEMBER 25, 1931



Dementi Studio

PROGRESS — OCTOBER 16, 1931

All-Metal Building Designed and Erected by Department of Public Works, Richmond, Va.

feet in depth. A two-story structure, with basement, provided the necessary floor space for the department at this time and allowed sufficient room for expansion during the anticipated five or ten years of occupancy. The physical and chemical laboratories, map reproduction quarters, space for dead files and heating plant are located in the basement, and the offices of the various bureaus, together with the necessary drafting rooms and file space, on the first and second floors.

Construction Features

The entrance to the building is satin-finished aluminum and glass. The doors are formed from rectangular aluminum tubing and have aluminum plate and glass panels; the door jamb is built up of extruded sections of the same metal.

Above the first floor level, metal is used chiefly for both the exterior and interior surfaces. The basement is of masonry construction. The pilasters and entablature are entirely of aluminum, extruded sections being used for drop-panels. The panels are of aluminum plate. The interior walls are formed from aluminum sheets, the space between the inner and outer walls being filled with insulating material after the erection of the walls.

Steel casement windows are used throughout the building. They form a continuous line between the pilaster columns from the first floor level to the base of the entablature, the spandrel sections being set off with aluminum sheet and the mullions with aluminum paint.

The aluminum pilasters and entablature have a sand-blasted finish whereas the aluminum trim on the windows and between the window frames and pilasters has a satin finish. The steel window frames and the window panes in the spandrel sections of the windows are painted with aluminum paint; elsewhere the steel window frames are painted black in contrast to the aluminum.

Partitions on the first and second floors are of satin-finished aluminum sheet over wooden frames. The permanent partitions at the entrance extend to the ceiling while those between the structural bays extend only to within 3 feet of the ceiling, thus providing better ventilation for the offices. The ceilings are of plaster applied on metal laths; the floor covering is of $\frac{1}{8}$" asphaltic tile.

Construction Details

Columns and girders are considerably smaller in size than those used in the customary construction methods. This reduction in column and girder size as well as in the footing area is made possible through the use of the aluminum curtain walls and the steel floor and roof construction.

The base spacing of columns (6"x6", 20-pound; 8"x6½", 24-pound; and 8"x8", 31-pound H's) is 16' 6" by 16' 6". The spread concrete footings, upon which the columns rest, are 4½ feet square and extend to compacted clay gravel 18 inches

(Continued on page 48, advertising section)

DIMENSIONS

PART TWO

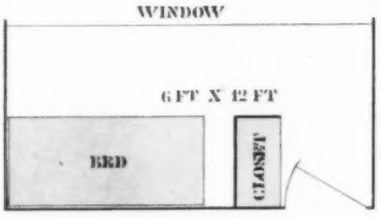
BEDROOMS • BATHROOMS

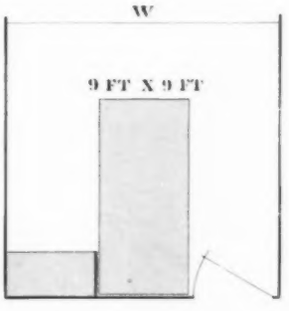
By A. LAWRENCE KOCHER
and ALBERT FREY

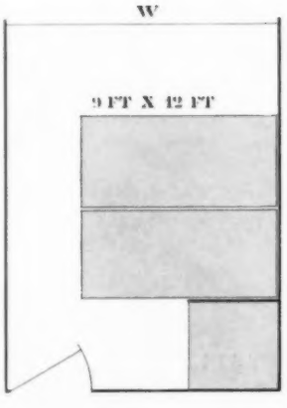
Bonney

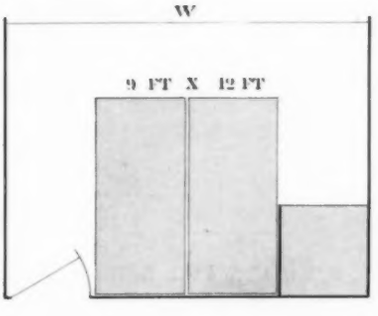
Bedroom with all furniture correct in size and in location for convenient use. The sitting-room area is made possible by the ample width of room. Cheerful lighting is obtained with windows at long side of room.

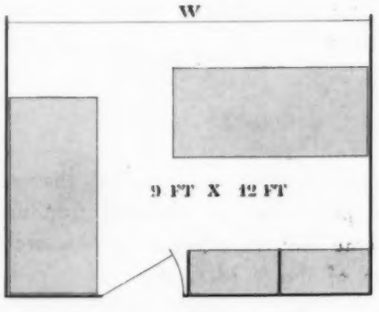
MINIMAL BEDROOMS

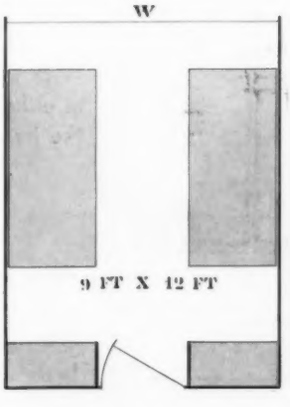










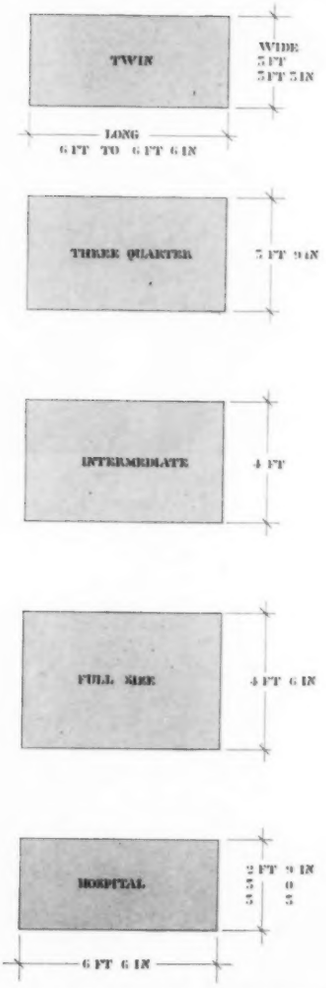


BEDROOMS OF MINIMAL SIZE are determined by the dimensions of:

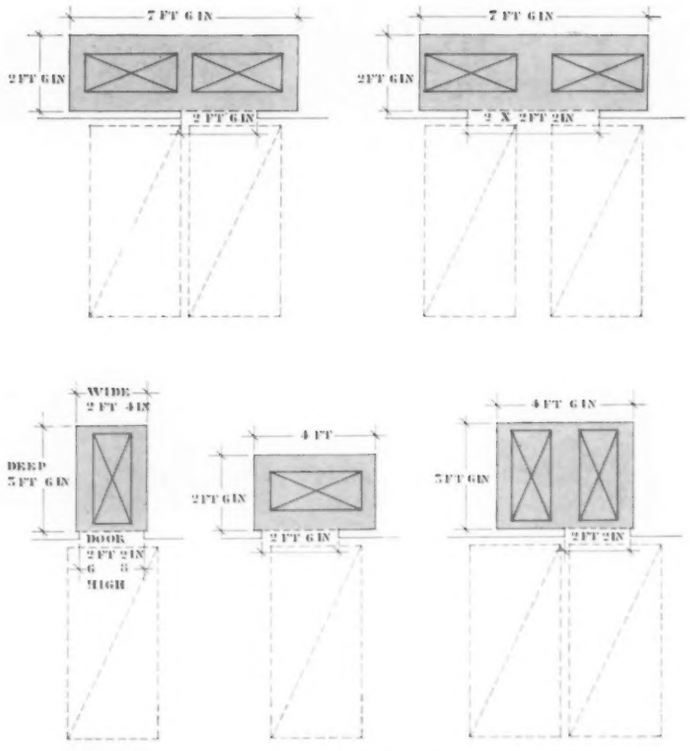
(a) One or more beds.
(b) Single or double closet.
(c) Furniture (dresser, chairs, table) and required space for walking about and dressing in a room.

The accompanying plans indicate a variety of possible arrangements for rooms of small size with single or twin beds. The full-size bed (4'6" wide) can be substituted for the twin bed so as to obtain increased floor area. In all cases entrance doors are opposite windows because access to rooms is from hall or corridor. In the suggested rooms there are two shapes: (1) with windows at broad side; (2) with windows at narrow end of room. Closets of double size are indicated for rooms occupied by two persons.

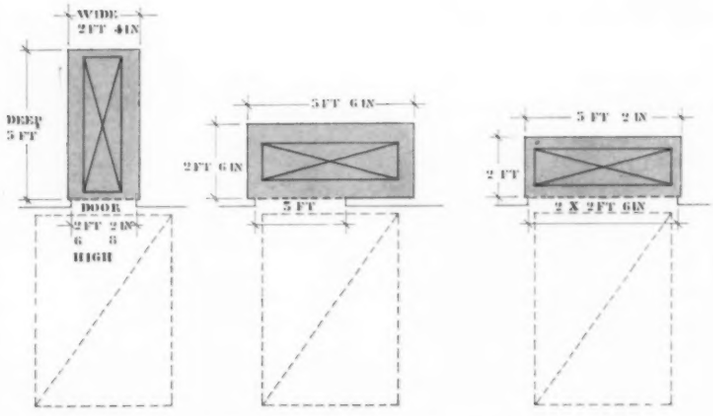
BEDS



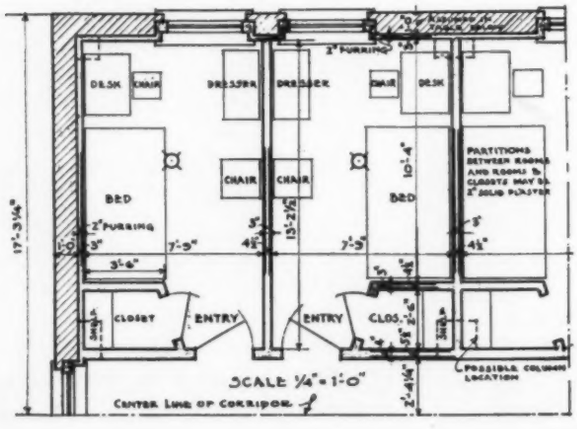
RANGE OF TYPICAL BED SIZES. There is no standard height for beds, with the exception of the hospital bed which is 27" (height from floor to top of springs, including casters, etc.). See special bed sizes recommended for hotels and hospitals at end of article.



CLOSETS FOR BEDS OF 3 FT X 6 FT 4 IN

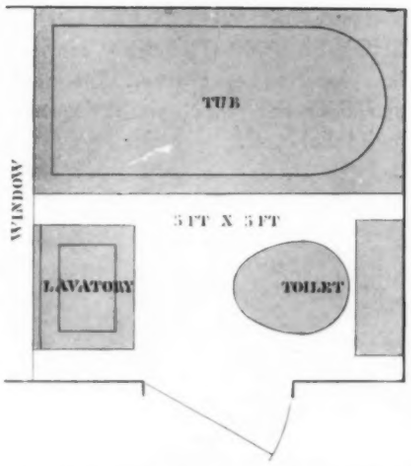


CLOSETS FOR BEDS OF 4 FT 6 IN X 6 FT 4 IN

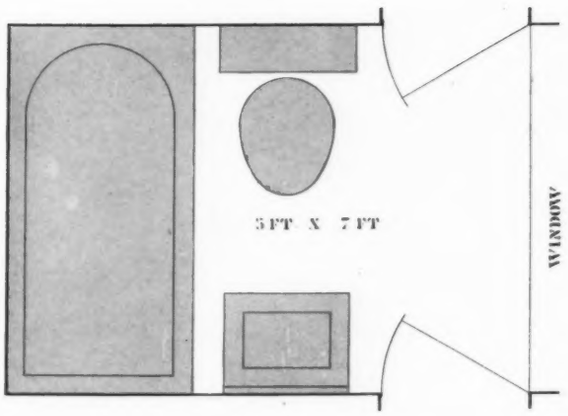


↑ MINIMUM SPACE REQUIREMENTS for beds that either are attached to closet door and swing into closet or are detached and roll into closet. With these disappearing beds, day storage can be in either deep or shallow closets, depending upon the available space.

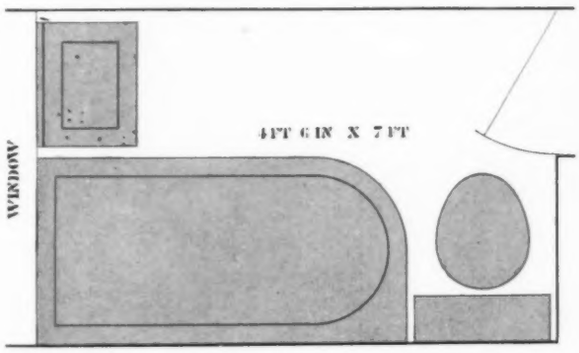
← An economical room arrangement that results from the placement of essential furniture. This room scheme was developed by the architectural division of the Y. M. C. A.



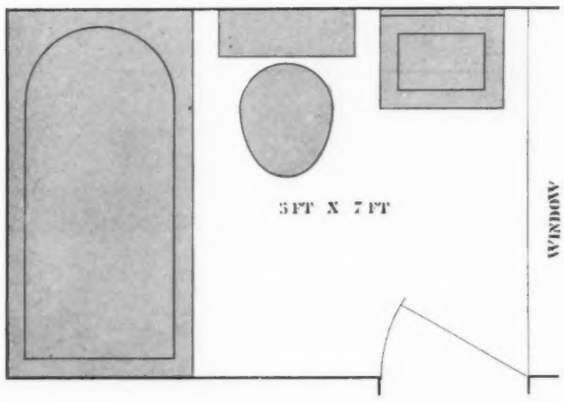
SMALLEST POSSIBLE BATHROOM. Single door entry essential (25 square feet).



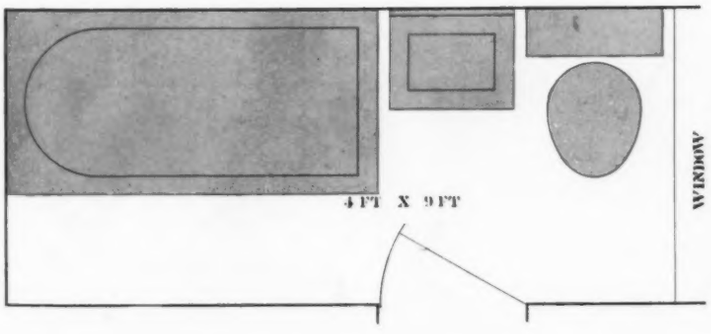
BATHROOM OF MINIMUM SIZE between two rooms (35 square feet).



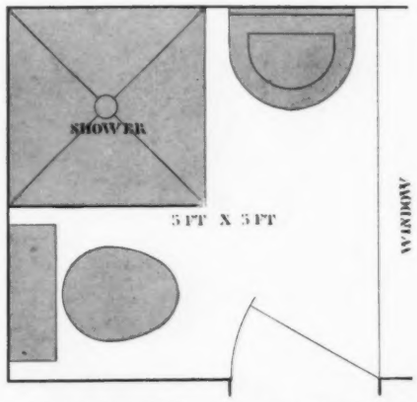
BATHROOM OF NARROW ARRANGEMENT suited to access from hall (31½ square feet).



SPACIOUS ARRANGEMENT. Single door entry (35 square feet).



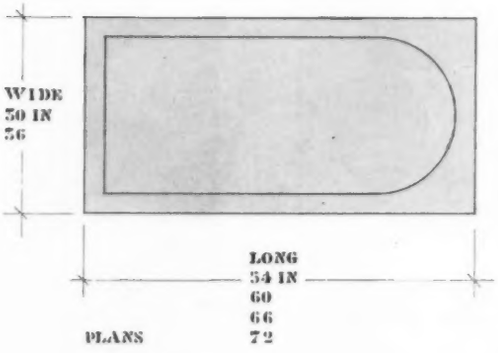
NARROWEST POSSIBLE ARRANGEMENT to parallel deep rooms. Fixtures are in row with economical plumbing (36 square feet).



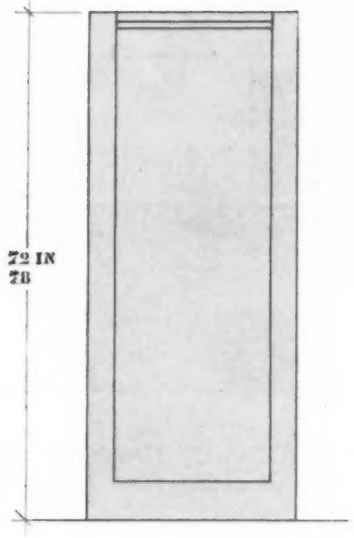
ARRANGEMENT OF MINIMUM SIZE with shower (25 square feet).

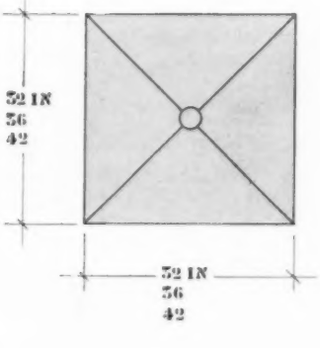
BATHROOM WHICH COMBINES SHOWER AND TUB with convenient location of fixtures. The wall and floor tiling are correct for tub and toilet seat.

ELEVATIONS



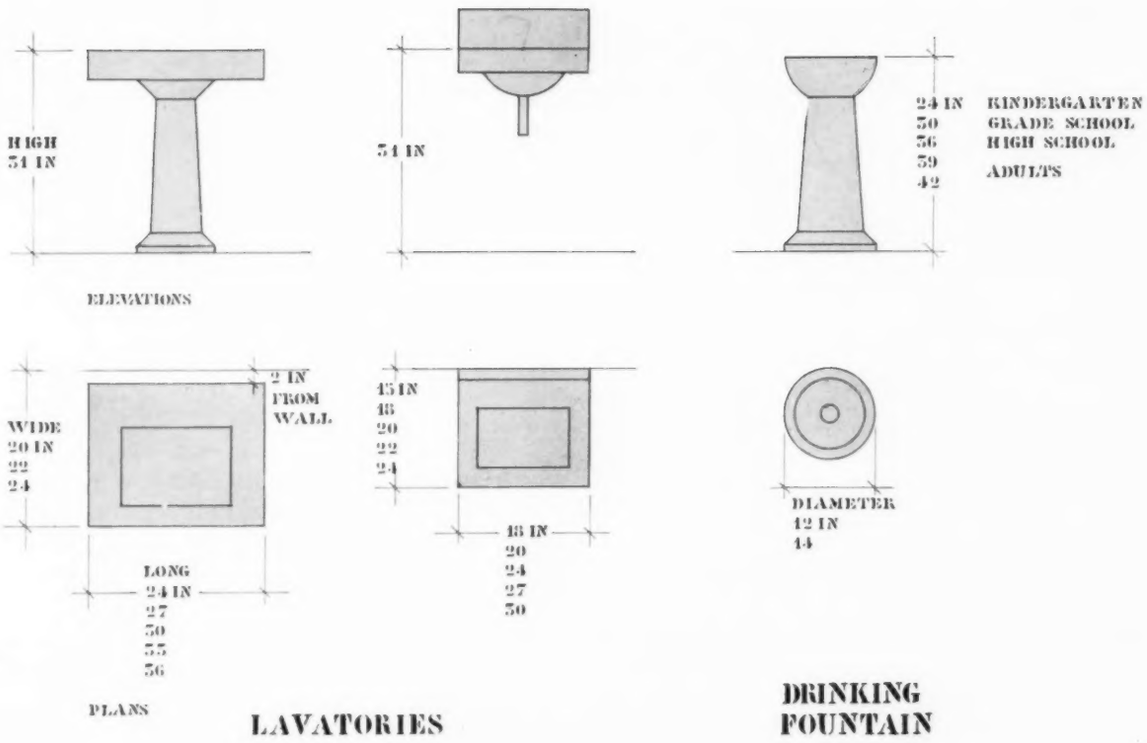
PLANS





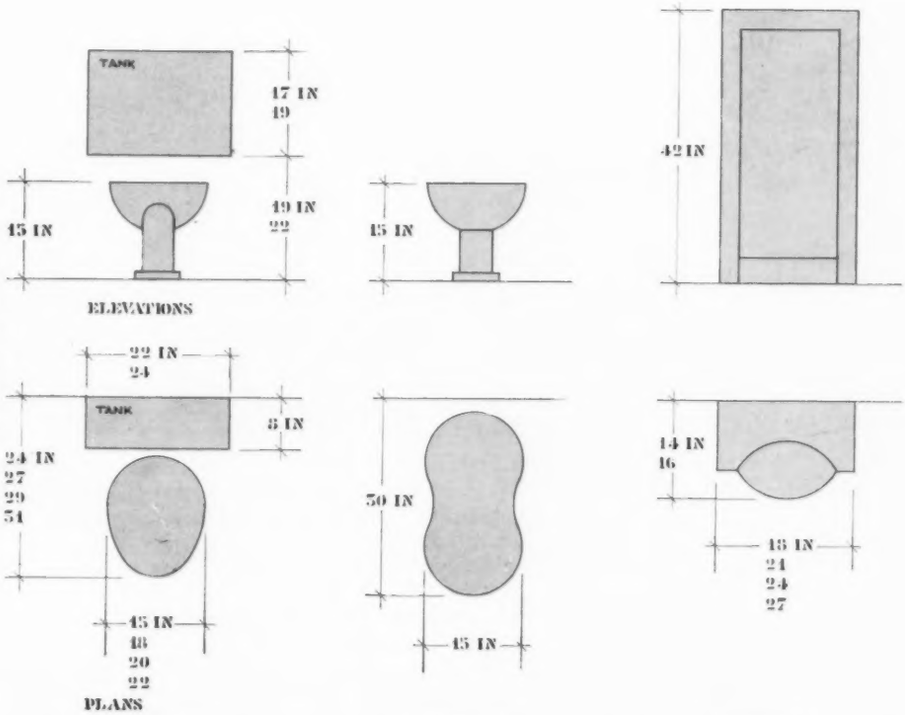
BATHTUB **SHOWER CABINET**

STANDARD TUB AND SHOWER-CABINET SIZES in prevailing use.
Exceptional and special sizes are also procurable.



LAVATORIES OF PEDESTAL AND WALL TYPE AND DRINKING-FOUNTAIN SIZES for general use. The recommended height for the lavatory is 31 inches. Drinking fountains vary in height from 24 inches to 42 inches, accommodating all school grades from kindergarten to adults. Wash basins may be obtained with oval, circular or semi-circular bowls. Corner basins are also obtainable.

THE DIMENSIONS FOR FIXTURES IN DRAWINGS are for adults. The height of the toilet seat for kindergarten and for the nursery toilet should be a maximum of 9 inches. For junior high school grades the recommended seat height is 13 inches.



Furnishings of a Typical Hospital Room:

1 bed (adjustable).
1 closet.
Bedside table.
Feeding table.
Adjustable reclining chair (patient).
Straight chair (visitors).
Dresser.
Writing desk (optional).
Couch (optional).

Recommended Bed Sizes:

1. For general hospital use:
   (a) Length (inside distance between head and foot posts) ..... 6′ 6″
   (b) Width (end angles of springs).. 3′ 0″
   (c) Height from floor to tip of springs, (inclusive of castors, etc.)..... 2′ 3″
2. For certain institutional use the need for a narrower bed is recognized. In these cases the recommended width is 33 inches, with dimensions the same as (a) and (c) in (1) above.
3. For private room use, where a wider than standard bed is desired, the recommended width is 39 inches, with dimensions the same as (a) and (c) in (1) above.

Research on Bed Sizes

"On June 27, 1923, Miss Margaret Rogers, superintendent of the Lafayette Home Hospital, Lafayette, Indiana, was appointed by the Department of Commerce to act as its representative in gathering the data on which to base recommendations for standard dimensions of hospital beds. Questionnaires were sent to many of the hospitals throughout the country. The replies were tabulated, showing the following results:

1. Total beds reported: 92,167.

2. Variations in length, 33, as follows: 60, 64, 65, 68, 70, 70¼, 70½, 71, 72, 72½, 73, 73½, 73¾, 74, 74½, 75, 75½, 76, 76½, 77, 77½, 78, 78½, 79, 79¾, 80, 81 82, 83, 84, 86, and 90 inches.

Reported lengths (in order of relative importance)

	Per Cent
72, 72½	27.5
75, 75½	16.0
74, 74½	14.5
78, 78½	12.3
76, 76½	11.3
77, 77½	11.2
73, 73½, 73¾	3.4
60, 71	1.0
80	.8
82, 90	.8
81	.6
79, 79½, 79¾	.5

"As regards width, the 36-inch bed is by far the most popular, representing considerably over 50 per cent of the beds on any basis of tabulation. For this reason it is believed that this width may be made standard, and that any other widths should be looked upon as special to meet special conditions. The 36-inch width of end angles of the spring has been adopted by the Federal Specifications Board as standard for all United States Government hospitals." *

Door width for general hospital use to permit passage of beds through doors:

Where 36″ bed is used, ... 3′ 8″
Where 39″ bed is used, ... 3′ 10″

(This allows approximately 5″ clearance with door open at right angles.)

Hospital beds should stand free from wall, crosswise in room (with side of bed, not head or foot, toward the window). Where the window draft cannot be avoided, the draft should be across the foot of the bed only. Obviously the successfully-designed hospital will lay out rooms so that all beds *can* be placed crosswise.

*Elimination of Waste: Hospital Beds. U. S. Department of Commerce. Government Printing Office., Washington, D. C.

REFERENCES

"Hospital Beds," Division of Simplified Practice, No. 24, Department of Commerce, Washington, D. C.
"Beds, Springs and Mattresses," Division of Simplified Practice, No. 2.
"Report of Committee on Building, Construction, Equipment, and Maintenance—1925," American Hospital Association.
"Hospital Beds," Federal Specification Board, No. 187.
"Standard Hospital Beds," U. S. Army, No. 32-3 (M) (also F S B 187).
"Progress in the Field of Hospital Standardization in Germany," by John Gaillard, ASA Bulletin, May 1931, page 7.
"Plumbing Equipment for Schools," by Minor Wine Thomas, School of Education, Columbia University.
"Recommended Minimum Requirements for Plumbing," U. S. Department of Commerce, BH 13.
"Outline of the Industrial Sanitation Code," American Standards Association, 1924 draft prepared by committee Z4.
"Hospital Plumbing Fixtures," Division of Simplified Practice, No. R106-30.
"Plumbing Fixtures," U. S. Army No. 83-6 (Q) (also F S B 448).

TECHNICAL NEWS AND RESEARCH

Fischer

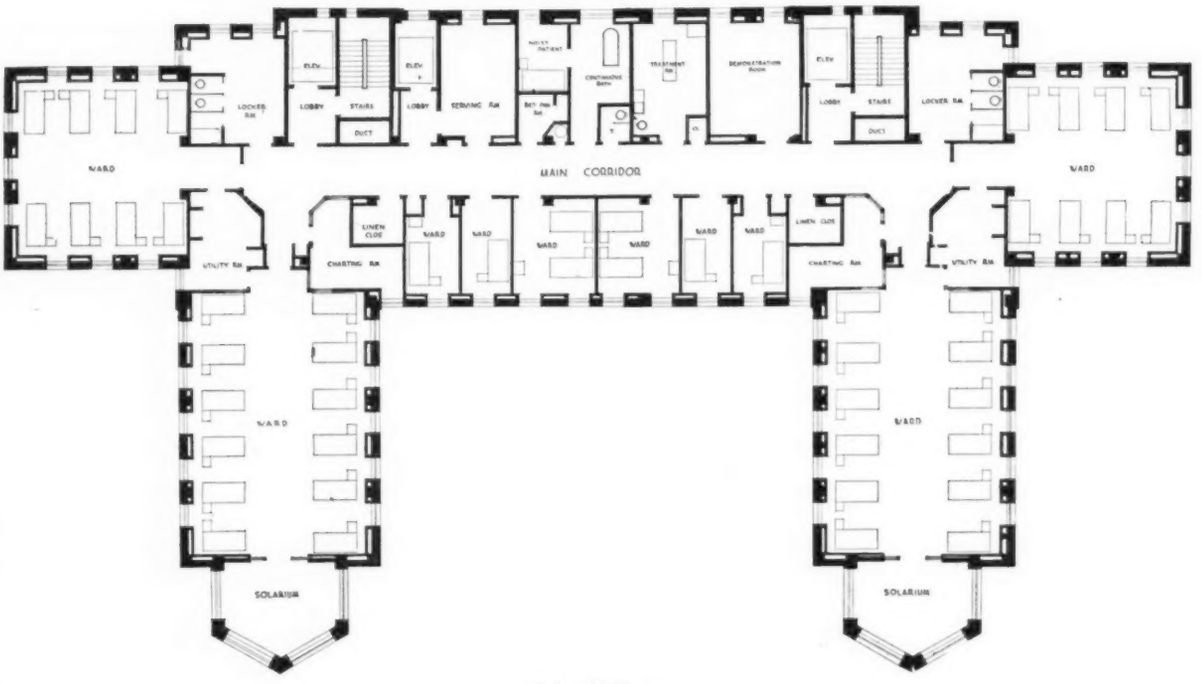
NEUROLOGICAL INSTITUTE OF NEW YORK, COLUMBIA-PRESBYTERIAN MEDICAL CENTER
JAMES GAMBLE ROGERS, ARCHITECT — C. F. NEERGAARD, CONSULTING ARCHITECT

PART ONE — INSTITUTIONS FOR THE MENTALLY AFFLICTED

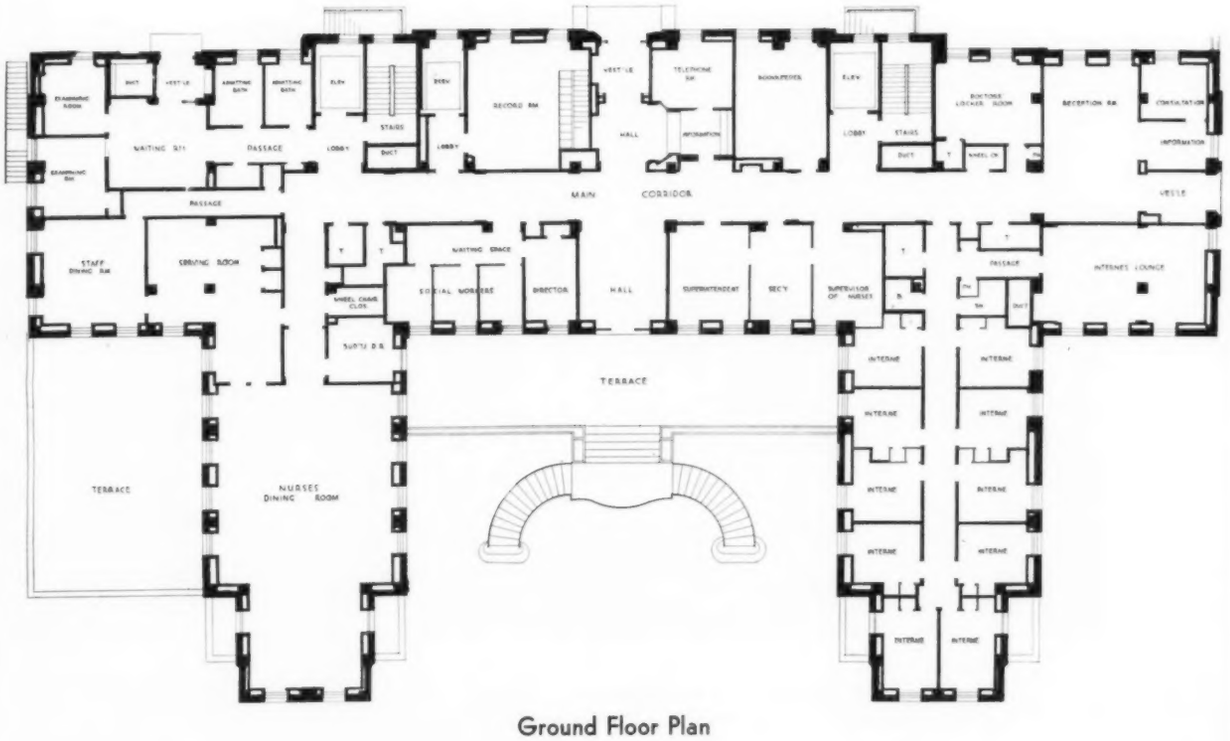
By Lewis F. Pilcher, Architect

PART TWO — PLANNING THE SURGICAL FACILITIES

By S. S. Goldwater, M.D., Hospital Consultant



Fourth Floor



Ground Floor Plan

THE NEUROLOGICAL INSTITUTE OF NEW YORK
COLUMBIA-PRESBYTERIAN MEDICAL CENTER

JAMES GAMBLE ROGERS, ARCHITECT
CHARLES F. NEERGAARD, HOSPITAL CONSULTANT

INSTITUTIONS FOR THE MENTALLY AFFLICTED

A Program of Planning Requirements

By LEWIS F. PILCHER, Architect

It is assumed that a typical institution for the treatment of mental diseases will have a patient population of 3,500. The buildings, it is also assumed, will be divided into seven groups for general and medical administration, and when possible will be grouped geographically, although not necessarily in close juxtaposition:

Group 1—Reception Buildings	6%
Buildings for Convalescents	4%
Group 2—Hospital Buildings and Psychiatric Unit	2%
Building for Disturbed Patients (Reception Group)	8%
Group 3—Buildings for the Quiet and Appreciative Chronic Class	14%
Group 4—Building for Workers (Laundry, Shops, Farm, Grounds and Power House—Service Street and Farm Colony)	40%
Group 5—Buildings for Restless and Noisy Cases	20%
Group 6—Buildings for Epileptic and General Paralysis Patients	3%
Group 7—Building for Tuberculosis Cases	3%
	100%

Data in this article were obtained by Prof. Pilcher as State Architect of New York.

To determine the requirements for a proposed State institution which would make possible the advancement of a preventive, curative and custodial policy, and provide adequate facilities for identification and treatment of all stages of mental disease, an investigation was undertaken by the office of the State Architect. This investigation was based on more than 30,000 actual case studies.

Since the condition of mental patients is not fixed and since the method of classification is that of assignment according to behavior, it was necessary to learn through the examination of actual cases the average number of patients in each class and the specific requirements of these classes.

This information, as it appears herewith, has been compiled by Prof. Pilcher in the form of a typical building program for an institution treating 3,500 patients. It is now being used by advanced architectural students at Pennsylvania State College as a thesis program.

Planning Considerations

Group 1 should have its principal outlook towards the south, free from the view of other hospital buildings. This is for the psychological reason of aiding those who come to the institution for the first time, and of shortening the period which must elapse before convalescents can return to their families. These features are much less important in other divisions of the hospital.

The superintendent's house should be fairly near Group 1, and also the administration building, in order that he may be brought as frequently and conveniently as possible in contact with this department of the hospital.

The convalescents' pavilions should be separated from the reception unit, but in close relation to it, and under the same medical management. There should be a garden outlook adjacent to the landscaped entrance plaza.

In the case of buildings for the infirm it is not necessary to separate the sexes. It is necessary, however, to do so in the case of patients in Groups 2, 4 and 7.

The mortuary should stand in fairly close relationship to the infirm group in order to avoid the necessity of transporting bodies through the entire grounds. The death rate should be figured at 6 per cent.

The buildings in Groups 3, 4, 5 and 6 may be arranged entirely with reference to convenience and economy of administration. Grouped dining halls should be provided for the different classes of patients. Men and women should be cared for in separate units. These units should have several pavilions so placed as to provide a graduation from the appreciative chronic cases to those in an advanced senile state. The day rooms should be oriented to obtain sun for the greater part of the day. No dormitory should be planned for more than 50 patients:

Dormitory space—50 square feet per patient.

Day-room space—40 to 50 square feet per person.

One toilet and a lavatory are required for each 6 to 10 patients, according to the type of service. One spray bath is required for each 30 patients.

All wards should be provided with an adequate number of single rooms, which should not be larger than 90 square feet in order to avoid the use of two beds in one room.

No dining hall should plan for more than 50 patients. Larger areas may be used if divided by dwarf partitions into smaller sections for 50 or fewer patients. All patients occupying the same dormitory should occupy the same dining room:

Dining room space—14 to 16 square feet per patient.

Tenth Floor

Sixth Floor

THE NEUROLOGICAL INSTITUTE OF NEW YORK
COLUMBIA-PRESBYTERIAN MEDICAL CENTER

JAMES GAMBLE ROGERS, ARCHITECT
CHARLES F. NEERGAARD, HOSPITAL CONSULTANT

BUILDINGS

Administration Building

Office of superintendent.
Offices of assistant physicians.
Offices of medical staff.
Offices of steward.
Offices of clerical staff.
Offices of welfare workers.
Offices of director of welfare of hospital.
Medical records and stenographers.
Medical library.
General post office.
Telephone central.
Reception of visitors.
Issuance of passes and information.
Toilets for public.
Utility rooms.

Psychiatric Reception Hospital

First Floor:
Office of medical director.
Office of staff.
Office of nurses.
Records.
Examination room.
Waiting room.

Second and Third Floors—Psychiatric Clinic:
Office of director.
Rooms for eye, ear, nose, throat, teeth treatment.
X-Ray examination and dressing rooms.
Wasserman tests.
Endocriminology.
Laboratory for stomach, urine and excreta analysis.
Psychology (3 rooms).
General research laboratory.
Small lecture room.

Basement:
Hydrotherapy.
Rest rooms.
Pack rooms.

General data regarding psychiatric reception hospital:
This building is best arranged with the above activities in the center and with wings in which are placed dormitories, single rooms and day rooms for men and women. Direct light is required in all rooms and corridors. Not more than 6 patients should be placed in psychiatric unit dormitories, which should have bath, shower, toilet and lavatory in direct communication as dependencies.

Individual lockers should be provided. Nurses' duty rooms are to be planned for each classification; these rooms to serve for examination rooms and as wards as circumstances require.

Other provisions:
Diet kitchen on each floor in patient wings.
Small dining rooms.
One isolation room, with toilet facilities in each wing for contagious cases and suspects.
One or two utility rooms on each floor of wings.
Elevators.
Apartments for two internes.
The dormitories and day rooms for suicidal cases should be arranged so that constant supervision is possible.

General Hospital

Wards and single rooms for patients.
Wards and single rooms for sick employees (30).—Separate from patients.
Nurses' duty rooms.
Linen rooms.
Observation rooms.
Day rooms and sun rooms for each ward.
Two operating rooms (major and minor).
Diet kitchen on each floor.
Several small dining rooms for patients.
Several small dining rooms for sick employees.
Elevator.
Apartments for two internes.
Wards should be lighted from both sides with partition on long axis serving as light screen 1' 0" above floor.
Water sections, utility rooms and clothes rooms adjacent to wards.

Kitchen Building for Psychiatric Reception Unit and General Hospital

Kitchen, scullery, storerooms.
Refrigerating rooms, serving rooms.
Dining rooms for patients.
Dining rooms for nurses and attendants.
Dining rooms for staff of reception hospital, psychiatric clinic and general hospital (space per person: 16 square feet).

Convalescent Buildings

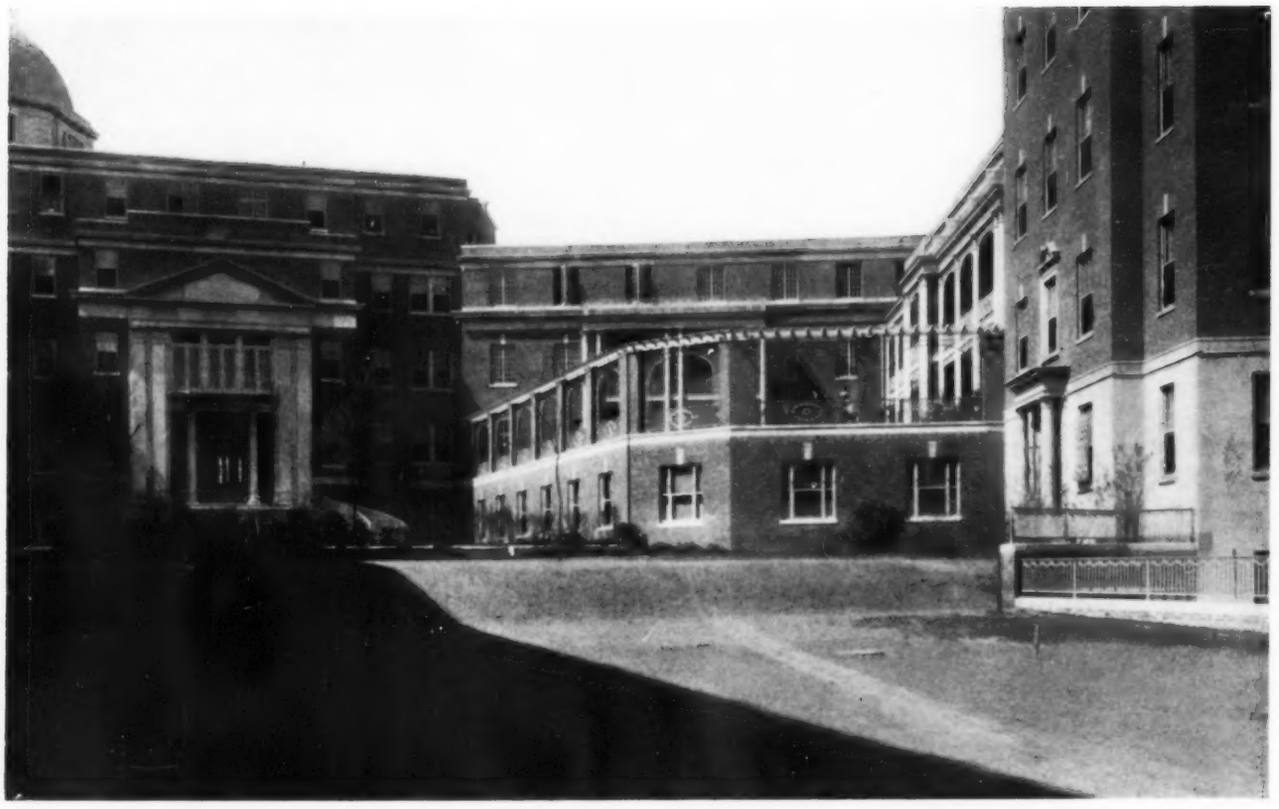
Men and women separate. It is especially important to relate this group to the outer world and the plan should suggest home or domestic ideas, with all the forms that recall the institutional life removed.

Disturbed Building (Reception Unit)

This building should be planned so that a three type classification for each sex is possible. Day rooms are to be provided, each with an occupation room in connection. In the case of two of the classifications prolonged bath equipment should be introduced. A dining room adjacent to each classification is required. Diet kitchen and serving room may be combined.

This building forms part of the reception unit or group. It should be isolated from the other buildings of the institution and those of the group of which it is an integral part. It should not be seen from the entrance, reception building, approach or from the convalescent unit.

Not more than four persons should be located in a dormitory. All doors should be flush veneered,



INSTITUTE OF HUMAN RELATIONS AND STERLING HALL OF MEDICINE AT YALE UNIVERSITY
GROSVENOR ATTERBURY, ARCHITECT

The outdoor balconies facing the elevated terrace open on individual rooms in the psychiatric ward. This ward is divided into two complete units, one on each floor, containing 25 beds each.

opening into the corridor, with hardware on the outer side. The partitions should be solid. The heating and ventilation systems must be indirect, with openings high on the walls. The window openings should be protected with a substantial steel mesh on the interior. The toilets are to be open and exposed so as to enable easy, direct supervision by attendant. For the day-room space allow 100 square feet per patient.

Chronic Building Units

In the housing of the Appreciative Chronic cases men and women patients are segregated. The grouping of several pavilion units of one or more stories about a landscaped area is advisable. When a number of units are grouped, a continuous corridor should connect the several pavilions; these should be spaced about 70 feet apart. On one side of the corridor between pavilions are to be arranged stairways (panic and service) and rest rooms (opposite). Provision may be made for single rooms, nurses' room and linen rooms.

Bathing facilities and occupational rooms may be located in the basement.

Dormitories:
For 34 patients, allowing 50 square feet per patient with master section equipped with one toilet for each 10 patients, one lavatory for each 6 patients and one emergency shower bath.

Day Room:
A south exposure is advised. Allow 40 square feet for each patient. Utility rooms and nurses' toilet and clothes room.
Charge nurses' suite in all pavilions containing more than one unit.
Nurses' duty room.
Linen room.
Several single rooms.
Clothes room—clothes chute, dumb-waiter, towel closet.

If, because of greater efficiency of service and adaption to ground requirements, the designer should advance a plan scheme for 2-story, 4-ward units, with a capacity of 275-300 patient beds in each unit and using the same area and sanitary requirements as in the case of 34-bed dormitory pavilions, the ward proportions of beds on each floor should be as 16, 16, 24; between the 16- and 24-bed dormitories there should be arranged attendant and night toilets, utility closet and clothes chute. The ward on the floor nearest the day rooms should have a capacity of 16 beds. Adjacent to this ward, and between it and the day room, should be the panic-service stairways, clothes room, charge nurse suite (bedroom, closet and bathroom), linen closet and clothes chute. The waste chute should serve the day room. The

dressing rooms adjoining the day rooms should be convenient to water sections and should provide for the care of private clothing and the issue of institutional clothing.

Dining Building for the Chronic Groups

The mess hall buildings should provide dining rooms for 50 patients in each. They may be two stories in height. Approximately 15 square feet of space should be allowed for each patient. Dining rooms for 50 nurses and attendants and adequate toilets are to be arranged. Connected with the dining building should be a fully equipped kitchen with overhead ventilation and light. Necessary scullery, store and refrigerating rooms are to be provided. If the building is to have more than one story, sufficient serving rooms with dumbwaiters, or an elevator for food cars, should be provided. Round tables seating 8 persons are to be used.

Chronic Disturbed Group

This building or group of buildings should be sufficiently distant from the others to prevent annoyance. Three classifications may be used. Dormitories should not contain more than 6 patients. Not less than 8 betterment suites of one and two rooms with connected vocational room and open toilet should be planned.

Epileptic, General Paralysis, Infirm Units

The same type of building may be used, although placed separately for the care and treatment of the epileptic, general paralysis and infirm patients. The chief requirements for this type are easy stairways, preferably ramp, and extra facilities for bed service. The day room should be planned with porches where the patients may be in the open air and sun, protected from the weather.

Low-Grade Patients

For the low grade of patients, including those with unclean habits, a unit should be planned with extra facilities in water sections and the construction should be so conceived that all portions may be freely flushed and drained.

Psycho-Neurotic Housing

It has been determined that the modern curative hospital, for the complete treatment of mental diseases, should provide special housing for the observation and betterment handling of psychoneurotics, the emotional cases being separately housed. These psycho-neurotic units are to be related to the housing group of the nurses and employees. They should be placed so that this class of patients may be kept in touch with normal everyday interests and activities.

Tuberculosis Pavilion

This building is to be isolated from the other institutional groups. It should face the southeast (the greatest exposure should be to the south). The plan should provide for an infirmary for the observation period; wards for infirm, disorderly and moribund cases. Outdoor sleeping porches, well protected from drafts, could serve all sleeping quarters.

Separate buildings should be constructed for ambulatory cases.

Assembly Building and Chapel

This building should be a structure combining the public and congregate activities of the institution. It should provide facilities for entertainment, religious service, school, library and applied social welfare. The school unit should serve 150 patients at one time. The assembly hall should seat 1,200 and have full protection against fire and panic.

Greenhouses

Separate from the propagating houses located in the farm colony. These houses could be situated in the vicinity of the reception group and approached from the appreciable chronic units.

Service Street

On the service street should be located:
Power plant (5 300-h.p. boilers) and coal supply.
Terminals of the railroad spur.
Mechanical shops.
Storehouses.
Institutional scullery.
Refrigerating plant.
Fire apparatus house.
Industrial building and vocational building.
Laundry.

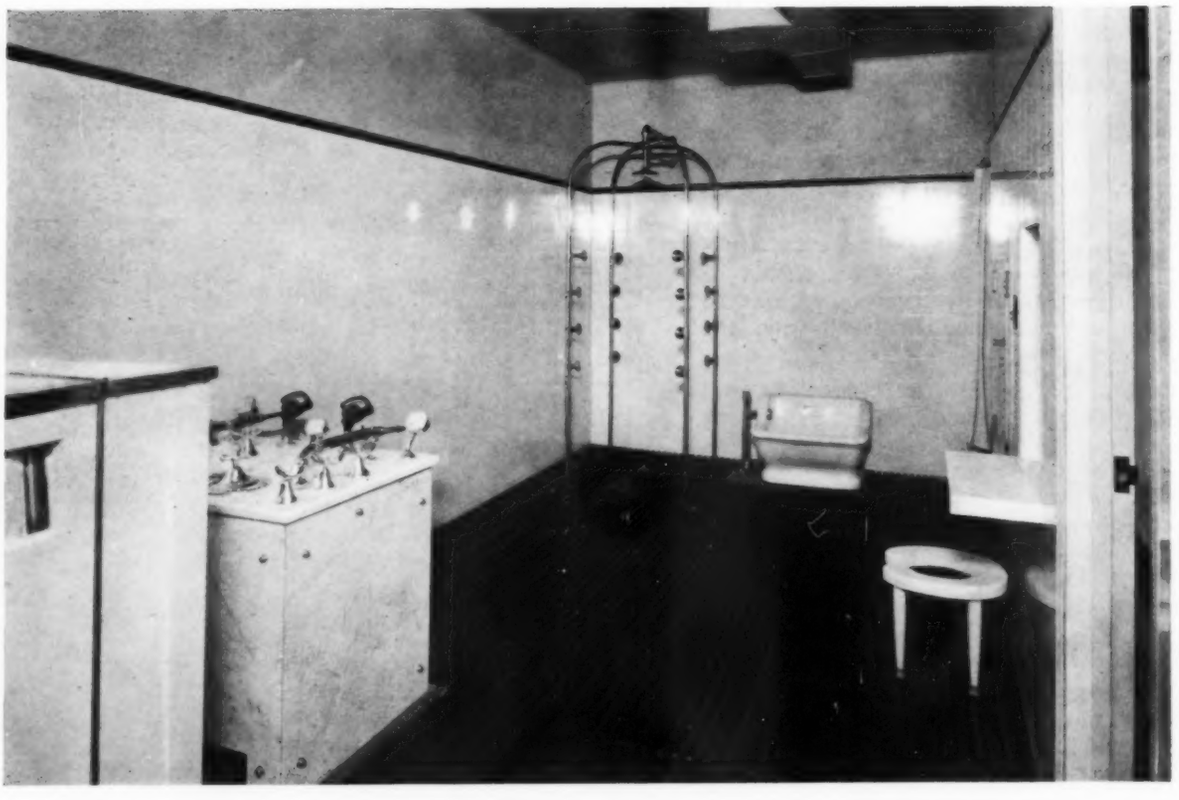
Guards

At the entrances to the reception group and the chronic groups there should be, for each, a gatehouse; at suitable locations there should be placed two shelters for ground guards.

Farm Colony

Within a rectangle of 100 acres should be arranged the following:
Residences for the chief farmer and veterinarian.
House for 25 employees.
Quarters for 100 patients.
Vegetable forcing house.
Vegetable and fruit storage, and root cellar.
Dairy barn for 200 cows.
Milk house and sterilizing plant (3000 quarts daily).
Stable and tool shed (20 horses).
Dairy and young stock barn (90 head).
Laying houses, poultry storage and brooder house.

Gymnasium in the Psychiatric Ward



Hydriatic Room in the Psychiatric Ward

INSTITUTE OF HUMAN RELATIONS BUILDING, YALE UNIVERSITY
GROSVENOR ATTERBURY, ARCHITECT

Piggery (80 brood sows).
Colony houses (15 hogs, 1 sow and brood).
Slaughter house (1200 square feet).

Within the 100-acre limit and conveniently arranged, making adequate provision for irrigation, drainage and wind protection, are to be plotted the acres for pasture and stockyard (adjacent to stable, stock and dairy barns), vineyard and fruit orchards.

Outside the 100-acre rectangle the cultivation of vegetables, silage, hay, grain, potatoes, and field crops should be provided for.

Patient Distribution

The distribution of the institution census, for an assumed population of approximately 3500, would be as follows:

Reception building	100
Reception, disturbed patients' building	60
Male convalescent pavilion	40
Female convalescent pavilion	60
Surgical—medical hospital	250
Civil cases	30
Psycho-neurotic betterment quarters	90
Male appreciative group	816
Male infirm unit	150
Male epileptic building	100
Female appreciative building	816
Female infirm unit	150
Female epileptic building	100
Low grade, filthy unit	200
Chronic disturbed group	318
Farm group	100
Tuberculosis unit	90
Total patient census	3,470

Personnel:

Residences and quarters for scientific and medical staff	20
Superintendent	
Assistant medical superintendent	
Visitors' house	
Chemical director	
Dental surgeon	
Two assistant physicians	
Two assistant physicians	
Two assistant physicians	
Senior assistant physician	
Four senior assistant physicians (bachelor)	
Officers' club (quarters for 4)	
Staff and administration employees	
Staff	12
Employees	30
Nurses' home, female group	100
Five cottages for 18 nurses—each cottage is under charge of an undergraduate nurse (total 19 each)	95
Two cottages for charge nurses and supervisors (each housing 18)	36
For male group:	
Main housing unit (nurses' home)	100
Five separate cottages each for 18 attendants. (Including home economic student nurse, total 19)	95
Two cottages for nurses' supervisors (each housing 18)	36
(In these three groups of nurses' and attendants' quarters, 90 psycho-neurotic patients are to be planned for.)	
Building for outside employees	80
Farm colony employees	25
Residences for engineer, assistant engineer, controller of grounds, chief farmer, sanitary engineer, and sergeant-at-arms	6
Internes resident in reception, medical, and convalescent units, in addition to the residences for staff resident group	6
Total personnel census	641

Water Supply and Tower

The water tower should be located where the head pressure requires. The tank should be 20 feet in diameter and with a capacity of 50,000 gallons. The water surface in the tower tanks when full, should be 160 feet above the ground level directly beneath the tank.

The origin of the water supply—its evidence of cleanliness, exposure to the sun and pure air—should be exemplary of the character of the whole institution. It should be made an object of interest to all visitors.

Sewage Disposal

The sewage disposal system will occupy an area approximately 80 by 350 feet. It should consist of:

Diverting manhole.
Screening chamber.
Preliminary settling tank and apparatus.
Sprinkling filters (80′ x 80′).
Final settling tank.
Sludge beds.
Liquid chlorinating apparatus.

The sewage production is based upon 200 gallons of water supply per day per person in the institution, approximately 85,000 gallons per day. It is essential that the plant be operated by one man.

Activated sludge operations may be considered, if economically feasible. The operation of the activated system, incorporating motors, air compressors, pumps, blowers, gas machines, etc., would require the services of four mechanical operators, and an additional area of 2000 square feet.

PLANNING THE SURGICAL FACILITIES

By S. S. GOLDWATER, M.D.
Hospital Consultant

The architect who undertakes to plan a hospital for the first time, and who turns to literature for guidance, finds at his disposal numerous descriptions of individual hospitals and a limited number of textbooks from which useful hints can be obtained. The available texts, as a rule, offer little more than an introduction, for the modern hospital is so complicated that a complete analysis of its structure and function is a task to be accomplished only by years of concentrated effort.

Several years ago Dr. Goldwater began the publication of a series of comprehensive reference lists dealing with special phases of hospital planning and construction. Three studies of this kind were in successive years presented to, and adopted as official documents by, the committee on construction of the American Hospital Association; these studies were devoted, respectively, to ward planning, to planning for private patients, and to planning of nurses' homes.

The list which is printed here relates to the operating room and its auxiliary services, and is presented as a continuation of the earlier studies, which have been issued by the American Hospital Association in pamphlet form.

Number of Operating Rooms

Based on number of operations; estimate maximum and minimum daily requirements; in this connection consider

(a) Daily surgical admissions.
(b) Volume of routine surgical work daily.
(c) Requirements for emergency cases and peak load.
(d) Staff organization and case grouping (facilities for open staff greater than for closed staff).
(e) Morning or afternoon program only, or all-day service.
(f) Separate operating rooms for courtesy staff (safeguards aseptic standards in staff service).

Location of Operating Rooms

Advantages of northerly exposure if natural lighting is to be used.

Isolated location, free from miscellaneous hospital traffic.

Stretcher route from and to wards and private rooms; avoidance of multiple elevator trips.

Physical relation to cooperating departments, including radiography, accident and emergency rooms, laboratory, resident staff quarters (also quarters of night call nurse, orderly and anesthetist, if service does not include day and night shifts or continuous duty).

Size of Operating Room

Minimum length and width of room sufficient to permit free circulation of attendants about the operating table and the surgical team (surgeon, operating assistants and anesthetist) without danger of contamination of aseptic field; 320 sq. ft. (exclusive of galleries or other space for observers) sufficient for normal working purposes; rooms containing scrub sinks, etc., must be larger than rooms from which plumbing fixtures are excluded; if large north windows are used in cold climate, consider the danger of placing the operating table too close to the window.

General Arrangement of Operating Rooms

Necessary service within the operating room by "unclean" assistants without invading aseptic working field; space on opposite sides of room for clean and "unclean" tables (see also "arrangements for observers").

Natural Illumination

North or northerly exposure.

Treatment of windows when other exposures are unavoidable.

Top light or vertical rays (value in abdominal surgery); climatic limitations to employment of overhead skylight in the summer; prevention of down drafts in winter (double glazing); radiator placement; location of warmed air outlets.

Dimensions of vertical windows and of skylights, if any; area proportionate to size of room.

Relation of top of window to ceiling.

Height of sill.

Clear or translucent glass.

Cleaning arrangements (outside balcony, leaning rail, strap hooks, supports).

Methods of controlling, regulating, or excluding light (lightproof shades of heavy, stiffened and filled fabrics, manually controlled or motor driven). Fixed or movable window sections.

Wide or narrow mullions.

Facility of operating hinged sash (type of hardware).

Material of window frames (rustless metal).

Weather stripping.

Screening of open windows in summer.

Heating (commensurate with size of window and degree of exposure).

Complete double glazing, or interior glass screen of reduced height to control down drafts; access to space between window and screen.

Artificial Illumination

Surgical illumination:
- Relation of light beams to surgical planes.
- Intensity, diffusion, control of shadows; illumination of field, reflection from field.
- Adaptability to type of surgical work.
- Obtainment of daylight values (color filtration).
- Ratio of intensity to normal daylight.
- Influence of color background on eye strain and acuity of vision.
- Value of color background as reflecting surface.
- Effect of intense, concentrated light on ocular accommodation.
- Indirect lighting.
- Semi-indirect lighting; use of mirrors.
- Single or multiple source.
- Distance from working surface.

Fixed *versus* adjustable overhead installations (advantage of flexibility *versus* danger of dust dissemination):
- Heat production and control.
- Supplementary adjustable lights supported by ceiling rods, wall extension brackets, or floor standards (universal joint).
- Special structural requirements.
- Cost of installation.
- Electric current consumption.

Utility lighting:
- Moderate intensity.
- Location.
- Sanitary features.
- Ease of replacement.

Emergency lighting system:
- Portable standard with portable battery.
- Central storage battery system.
- Automatic gas engine.
- Legal requirements.

Location of switches:
- In or out of operating room (factors of safety and convenience).

Air Supply and Air Treatment

Direct (natural) ventilation; used chiefly in small hospitals having a slight surgical service (rooms aired between operations).

Semi-indirect wall ventilators; warming and filtration of air-intake, associated with gravity exhaust flue).

Indirect:
- Mechanical exhaust only:
  - Actual sources of air supply where exhaust fan only is employed (air drawn directly from outdoors or from directly ventilated corridors preferable to air from sterilizing and workrooms).
- Gravity bypass to insure modicum of ventilation when exhaust fan is not active.

Mechanical supply:
- Rate of air change.
- Size of ducts; straight vertical ducts *versus* tortuous ducts; dry and moist air filters; cleaning of ducts and of dry filters.
- Thermostatic control.
- Arrangement for warming operating rooms in between-season periods when hospital wards are not heated.
- Humidity control: standard to be maintained (comfort, physiological need, safeguard against static).
- Seasonal variations.
- Control by operating nurses *versus* central control by house engineer.
- Signal lights if remote control is employed.

Floor Material and Treatment

Tile; terrazzo; marble; glass; rubber; composition (sanitary value, safety factors, durability, comfort, maintenance, ease of repair, relative cost).

Grounded metal floor grid as safeguard against gas explosions.

Floor slightly pitched to floor drain.

Floor drain; location of drain (under operating table or at one side); flushing valve.

Wall Material and Treatment

Tile (glazed or eggshell surface); marble; imitation marbles; terrazzo; glass; Keene's cement; plaster to ceiling or plaster above tile or other hard wainscot.

Height of wainscot: (a) utility height, (b) esthetic height.

Cap above wainscot or flush finish.
Sanitary base cove.

Angular or cove finish for vertical room corners and ceiling junction.

Enamel paint or dull finish of plaster surfaces.

Color Scheme

Value of floors, walls, ceiling, respectively, as reflecting surfaces.

Single color for walls and ceiling *versus* darker walls and lighter ceiling.

Relation of color to eye fatigue.

Demarest

OPERATING ROOM
MOUNT SINAI HOSPITAL, NEW YORK CITY
YORK AND SAWYER, ARCHITECTS

Doors and Doorways to Operating Rooms

Width of single doors.

Conservation of floor space through use of double or divided doors; width of such doors; extra cost.

Combination buck and jamb, flush finish.

Amputation of door stop 6 or 8 inches above floor to avoid dirt pockets.

Single acting or double acting.

Direction of swing; projection into operating room or corridor; danger of collision; utilization of space.

Sliding doors, exposed or in concealed grooves; access to grooves for cleaning.

Hand control; pedal control with pneumatic operation; 100 per cent automatic, independent of bodily contact.

Vision panel; height of center above floor; size.

Wood (flush or panel); hollow metal.

Push plates (metal, plastic material), of generous size.

Protection from stretchers (metal, rubber or plastic material).

Locks and keys.

Auxiliary dwarf doors (afford privacy and facilitate traffic and ventilation); dwarf doors inadmissible where air-conditioning system does not include corridor and other adjoining space.

Double-acting doors or framed opening between operating room and scrub-up room.

Arrangements for Observers

Portable stands (can be freely placed and removed when not wanted).

Built-in galleries (relatively commodious, higher than portable stands and therefore afford better view, but usually at greater distance from operating table).

Access to galleries or stands (noninterference with surgical procedures).

Space allowance (horizontal and vertical) for each row of seats; minimum height of first row of seats; distance from operating table; angle of vision.

Galleries parallel with or at right angle to axis of operating table.

Relation of gallery to window (obstruction of light).

Protection of aseptic field (glass shields).

Seating arrangements: economy of space in hinged seats; shape of seat to afford comfort; elbow rest.

Projection system (observers in adjoining room).

Coat space at entrance to gallery or in separate room near visitors' entrance.

Built-In Instrument and Supply Cabinets in Operating Room

Flush finish.

Locks.

Dustproof construction.

Transparent or opaque doors.

Width of (adjustable) shelves.

Free access.

Integral shelf alcoves with rounded interior angles; outer margin of shelf flush with wall.

Electric Receptacles

A. C. or D. C. (usually house current) supplemented by A. C. (supplementary public service) for special purposes.

General utility and special power plugs (portable x-ray, etc.).

Location: (a) safety factor, (b) convenient height of outlets above floor, (c) relative utility of assembled and distributed outlets.

X-Ray Display Box

Portable.

Fixed location (a) mounted on slide support in corner of room, (b) flush cabinet (2 large-sized films).

Unobstructed view from operating table and gallery.

Dark Room for Fluoroscopy (convenient location)

Compressed Air and Vacuum Supply

Portable apparatus; or stationary pump with pipe lines to all operating rooms (pressure gauges).

Special Operating Rooms

Nose and Throat:
- Special operating table or chair, or both; dental type cuspidor for minor operations.
- Waiting room for ambulant cases.
- Recovery room.

Eye:
- Lightproof shades; magnet; oil instrument sterilizer for cataract knives.

Urology:
- X-ray machine.
- Nonconducting floor covering under table.
- Formalin instrument cabinets.
- Electric cabinet (fulguration).
- Adjustable ceiling rod with electric receptacle and rheostat.
- Utility sink.
- Toilet adjoining.

Orthopedic:
- Plaster sink and drain board (marble or wood); suspension apparatus; splint closet.

Emergency (may be in accident ward).

Surgical Treatment or Dressing Rooms (distinct from operating rooms).
- Location (adjoining operating room or wards).

Surgeons' Scrub-up Sinks:
- Water supply (city water; filtered supply; sterilized supply).
- Proximity to operating room (danger of contamination increases with distance); in operating rooms, in alcove adjoining, or in separate room.
- Ratio of scrub-up sinks to operating tables.
- Single scrub-up alcove for two operating rooms (economy of double service).
- Height of rim from floor.
- Height of spout above rim (for comfort and avoidance of splashing).
- Elbow, knee or foot control.
- Material and finish of fittings (brass, nickel, chromium).
- Brackets or pedestals.
- Single or double sinks (do double sinks threaten asepsis?).
- Open spout on rose spray.
- Mixing valves (type).
- Built-in soap and brush containers.
- Liquid soap (gravity supply); control mechanism—foot or knee.
- Shelves over sink (height, width).
- Large-faced clock (effective location).
- Visual control of operating room.
- Ventilation of scrub-up room or alcove.
- Free space beside sinks sufficient for circulation without contact.
- Gown and glove containers (in operating room or scrub-up room).

Anesthesia

Relation of anesthesia rooms: (a) to elevator, (b) to operating room.

Number of rooms (use of operating rooms for anesthesia).

Width of doors.

Portable anesthesia stands *versus* central tank system with pipe supply.

Sink or lavatory.

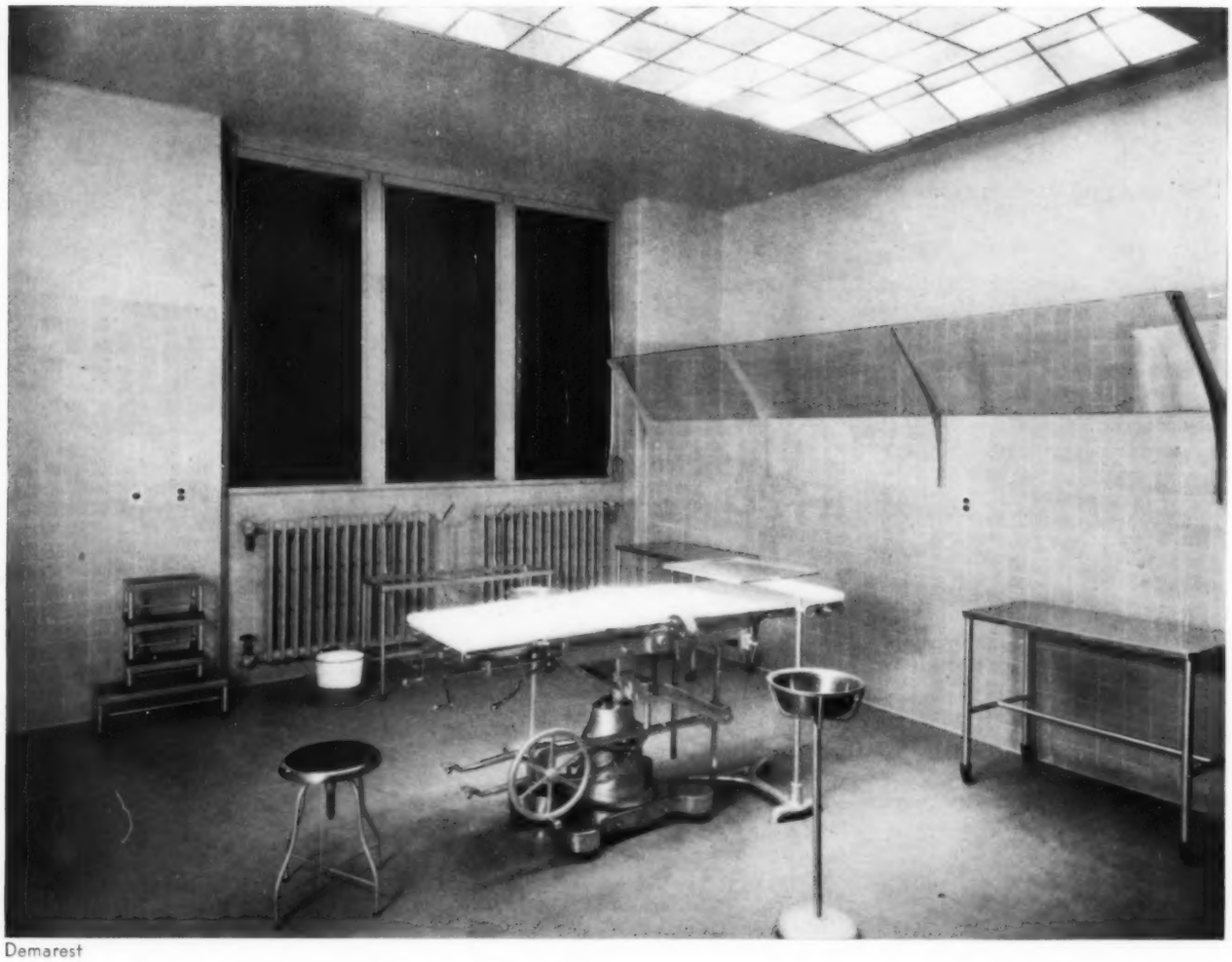
Supply cabinet.

Stretcher guards (doors and walls).

Ventilation.

Emergency push button.

Decorative scheme (psychological effect).



Demarest

OPERATING ROOM
MOUNT SINAI HOSPITAL, NEW YORK CITY
YORK AND SAWYER, ARCHITECTS

Sterilizing and Workroom

Size of workroom (number of workers, volume of work; intermittent or continuous service).

Central plant for sterilization of surgical dressings; location.

Central sterilization of (a) utensils, (b) instruments (risk of contamination in transit).

Local Instrument and utensil sterilizers; nonpressure or pressure type, adjoining operating rooms.

Single sterilizing or workroom with open sterilizers (instrument or utensils and instruments) for two operating rooms.

Access to local sterilizing and workrooms (a) from operating rooms, (b) separate access from corridor (requires additional space, but is serviceable), (c) automatic operation of door between operating room and adjoining sterilizing room ("magic" type requiring no touch).

Built-in dressing sterilizers and autoclaves.

Access to apparatus and connections.

Ventilation of built-in sterilizer compartments; floor drain.

Electric sterilizers; advantages and disadvantages.

Size and shape of drum sterilizers; economy of labor in large units; recording gauges.

Auxiliary dressing sterilizers (breakdown service).

Hood over open type instrument and utensil sterilizers.

Hydraulic or oil pump lift.

Vents for exhaust steam extended to open air.

Steam condensers ("ejectors").

Oil instrument sterilizers (electric connection).

Water sterilizers:

Central or distributed.

Size of units.

Duplicate apparatus for emergencies.

Recording gauges.

Elevation to insure adequate flow.

Pipe system (tin-lined) from central water sterilizers to operating rooms or adjoining workrooms (advantages and danger); reheaters at outlet (elbow control valve, receptacle beneath outlet).

Water still:
Single, double or triple distillation; capacity; location.

Cabinet for drum and supplies (separate storage for sterile and nonsterile supplies).

Metal or wood cabinets (pitched, sanitary top or built-in flush with plaster); drawers, cupboards, bins.

Counter shelves of wood, rubber, linoleum, composition or of stainless, noncorrosive metal; height above floor.

Interior adjustable shelves of sanitary construction.

Work tables.
Sink and drainboard.

Warming cabinets; separate or combined blanket and solution cabinets.
(a) Central installation.
(b) Individual warming cabinets, convenient to operating rooms.

Slop sinks:
Convenient location; flushing rim.

Special Workrooms

Glove preparation (sinks, cupboards, work tables, drying racks).

Salt solution preparation (single *versus* triple distillation).

Surgical tray preparation.

Plaster room (plaster bandage preparation).

Splint room (on operating floor, or adjoining pharmacy or central supply room).

Instrument washing room.

Instrument Storage

Central instrument room or distributed instrument cabinets.

Small individual cabinets for surgeons' private outfits or for special apparatus under strict department control.

Students' Lounge and Toilet

Teaching hospitals only.

Telephone Booth

Accessible to medical visitors.

Nurses' Dressing Room

Lockers, w. c., shower, couch.

Orderlies' Toilet and Dressing Room

Soiled Linen Closet

Ventilation.

Cleaners' Closet with Slop Sink

Ventilation; sanitary finish.

Corridor

Width; ventilation; acoustical treatment; floor finish; wall protection; privacy.

Apparatus Room

For special tables and other bulky apparatus intermittently used.

Recovery Room or Rooms for Desperate Cases

Proximity to operating suite.

Rest Room for Minor Ambulatory Cases

Private Consulting Room near Operating Room

For convenience of visiting staff.

Laboratory for Frozen Section Work

Not necessary if pathological laboratory is nearby.

Clinical Record Room

Stenographic service.

Supervising Nurse's Office

Telephone; emergency signal annunciator; clock, doctors' call system.

Local Signal System

For individual operating rooms connecting with
(a) *Supervisor's Office.*
(b) *Anesthesia Room.*
(c) *Laboratory.*
(d) *Student's Waiting Room.*

Dressing Room for Visiting Staff

Shower, toilet, telephone (exposed telephone or booth), space for desk, couch, chairs, lockers (individual lockers for active staff surgeons).

Lounge and Dressing Room for Surgical Staff

Usually combined with dressing room in smaller hospitals.

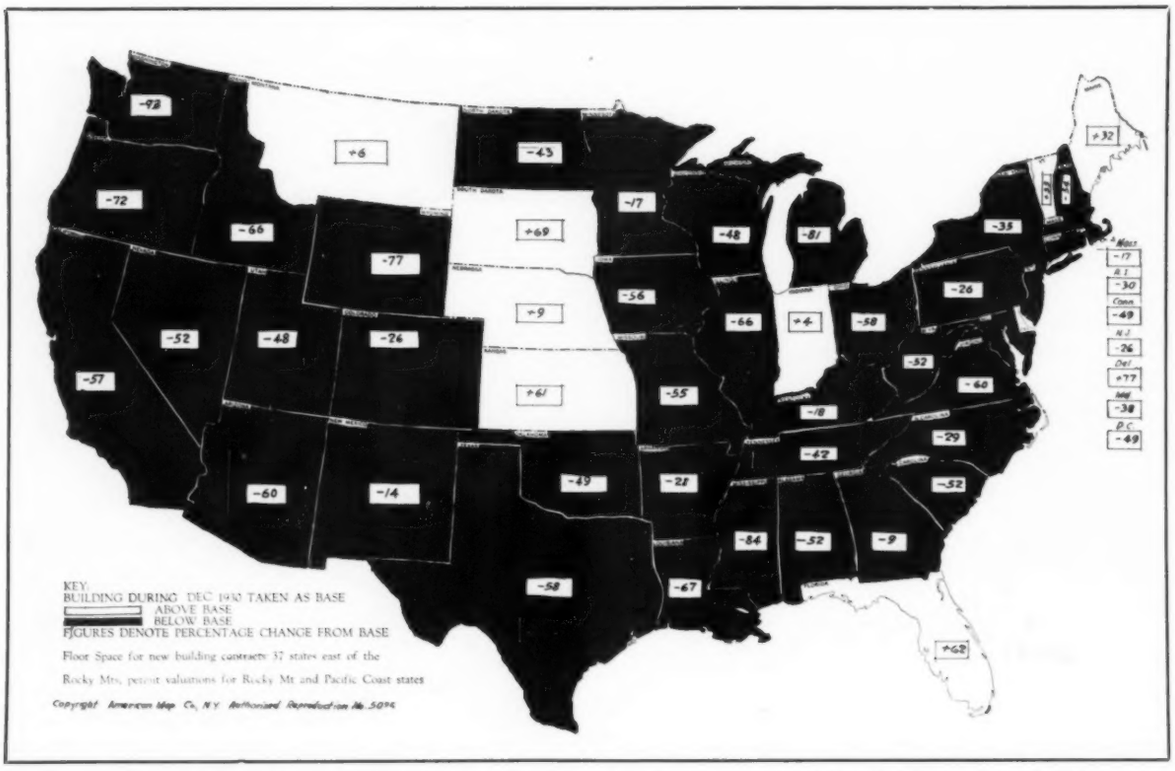
Special Dressing Room for Courtesy Staff

Registration Room and Lounge for Medical Visitors

Large clinics only; visitors' gown closet in smaller hospitals.

Dressing Room for House Staff

Alternate: use of visiting staff dressing room.



The December, 1931, building map showed eight states in the area east of the Rockies where building contracts, on a floor space basis, were higher than in December, 1930: Maine, Vermont, Delaware, Florida, Indiana, South Dakota, Nebraska and Kansas. The map for November showed nine states where the then current new building awards were larger than those of a year earlier. Of the states to show improvement in December, only Delaware, Florida and Nebraska showed gains in November. Of these states, only Florida maintained the gain scored in October; in fact, Florida has shown a consecutive gain over the corresponding month of the previous year since August, 1931. The increases here were principally due to small-house construction, although there has been a noticeable advance in commercial undertakings.

BUILDING TRENDS INDICATED BY THE CENSUS*

PART 6—INCREASING DEMAND FOR HOSPITALS AND INSTITUTIONS

By L. SETH SCHNITMAN

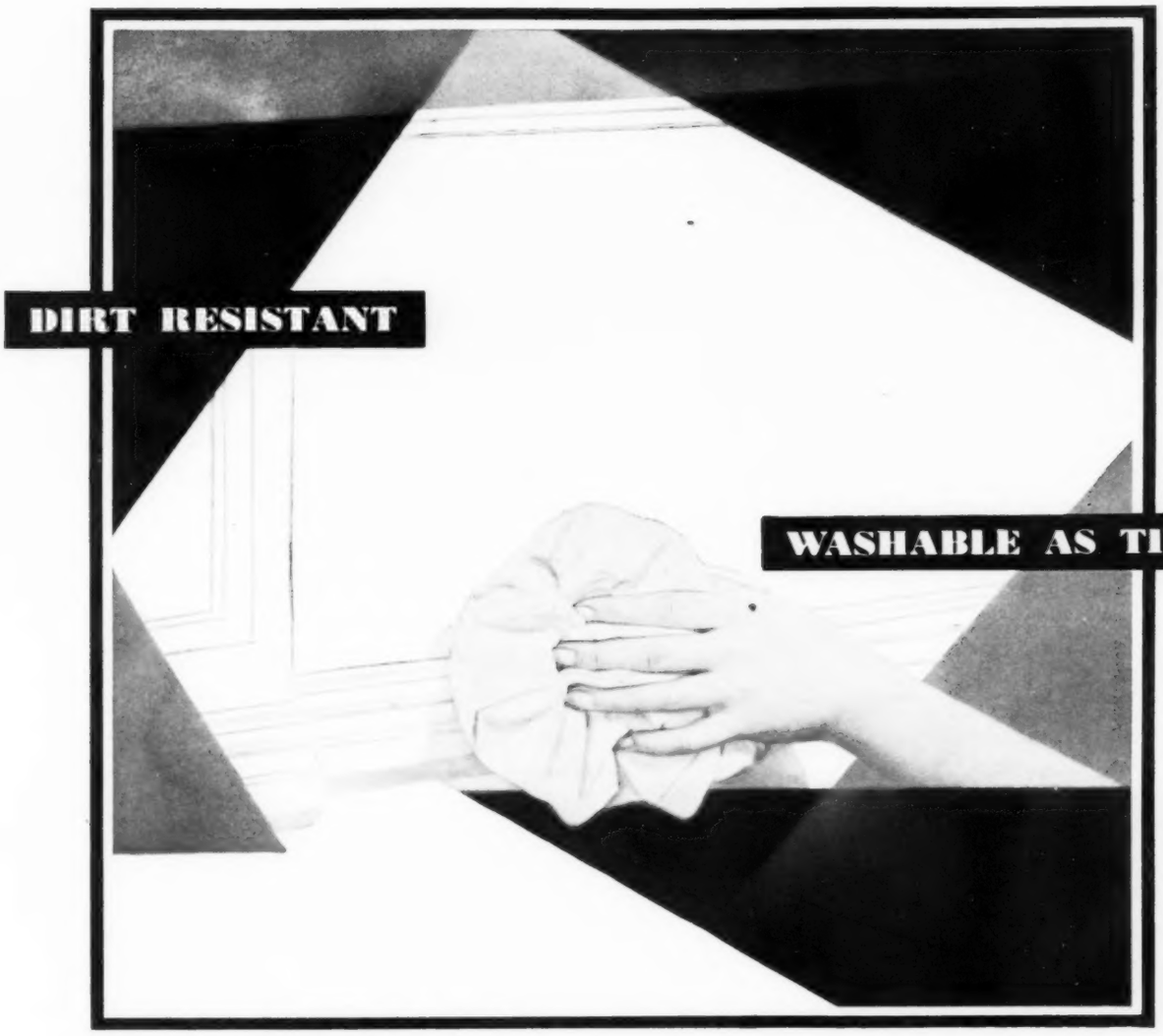
Society has made large advances in the care of its sick and infirm. Medical and sanitation science have materially enlarged the life-span expectancy of our people. At the same time the attitude of employers has shortened the work-span and is making more difficult the outlook of millions of our middle-aged wage earners. How then are these and the host of other new sociological, economic, political forces to affect the demands for new hospitals and institutions?

The composition of our population is undergoing striking changes; our middle-aged and aged are proportionately larger as a group than ever before; conversely our young are proportionately smaller as a group. In 1920, 21 per cent of our entire population was 45 years or more of age. In 1930, 23 per cent of our population was 45 years or older. In 1920, 34 per cent of our people were 35 years old or more; while in 1930, 37 per cent of the population was in that category. By 1940 it appears safe to assume that at least 25 per cent of our people will be 45 or more years of age and that at least 40 per cent will be 35 years or more.

From the population data alone it appears reasonable to presume that the demands for new hospitals and new institutions for the aged and infirm will continue to increase as long as the present population tendencies obtain. Our rising living standards will find a way to solve effectively the problem inherent in our present sociological and economic structure. Part of the solution will doubtless rest on new building—more hospitals, larger medical centers, more sanitariums, more asylums, more homes for the aged, more hospitals for the mentally deficient. This is not so much the price of progress as it is its reward, for as the

(*Continued on pages 34 and 44, advertising section*)

*Earlier articles in this series of population studies have appeared in these issues: Parts 1 and 2—August, 1931; Part 3—September, 1931; Part 4—October, 1931; Part 5—November, 1931.



YEARS of use in public buildings, offices and institutions, where good looks and practical qualities alike are essential, have proved the value of interiors painted with Barreled Sunlight.

Such interiors are lastingly bright . . . clean . . . cheerful. And they are easily . . . economically maintained.

A damp cloth quickly removes accumulated dust, smudges and finger prints from Barreled Sunlight surfaces; satin smooth, flawless, they have no minute cracks or recesses to catch and hold dirt.

Remarkably durable, Barreled Sunlight stands up under repeated washings. In addition to saving cleaning labor, it materially reduces the need of repainting.

Because it is an all-oil product, Barreled Sunlight may be tinted in a variety of pleasing colors to harmonize with interior surroundings. Tinted, it retains its washable qualities . . . rich depth.

Our catalog in Sweets will give you complete information. For your own files, let us send you our booklet, "For Interiors of Lasting Beauty and Cleanliness." Write U. S. Gutta Percha Paint Company, 22B Dudley Street, Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Company.)

. . .

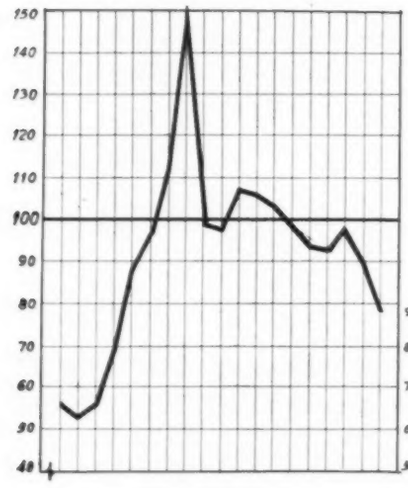
Barreled Sunlight is now available in two forms, Interior and Outside. Write for complete information on Outside Barreled Sunlight — its more pronounced whiteness, richer lustre and marked durability. (Note that both forms of Barreled Sunlight are readily tinted any desired shade.)

Barreled Sunlight

REG. U. S. PAT. OFF.

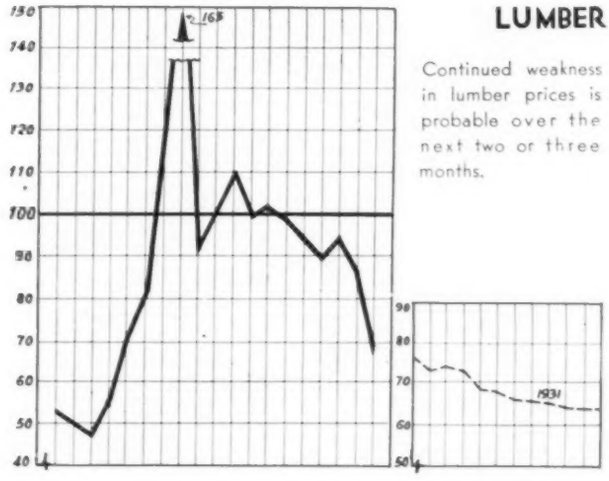
WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average—100



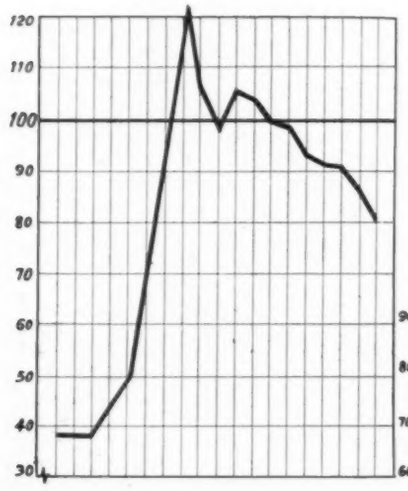
GENERAL INDEX

As yet there is no evidence that the long decline in material prices has been arrested.



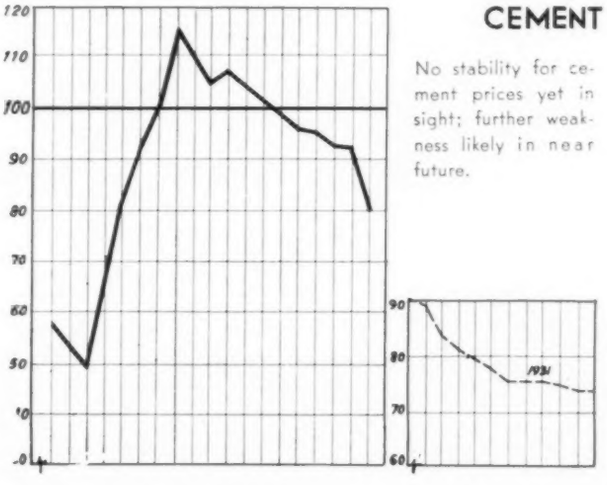
LUMBER

Continued weakness in lumber prices is probable over the next two or three months.



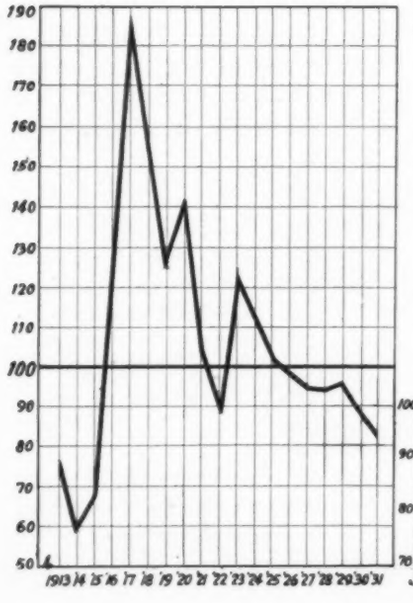
BRICK

Prices will likely recede from present levels; local building conditions will determine course.



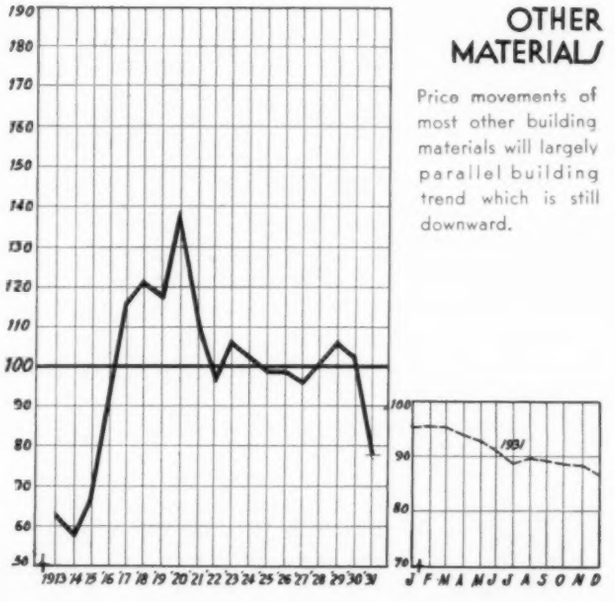
CEMENT

No stability for cement prices yet in sight; further weakness likely in near future.



STRUCTURAL STEEL

Current prices are not stabilized; recession from present levels appears imminent.



OTHER MATERIALS

Price movements of most other building materials will largely parallel building trend which is still downward.

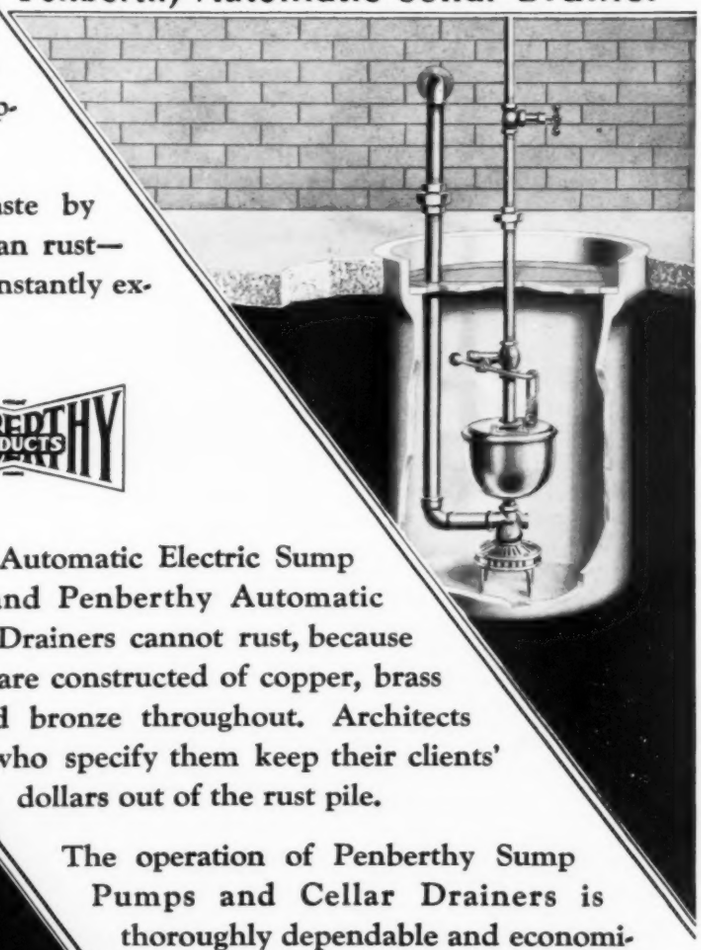
A $600,000,000 Waste!

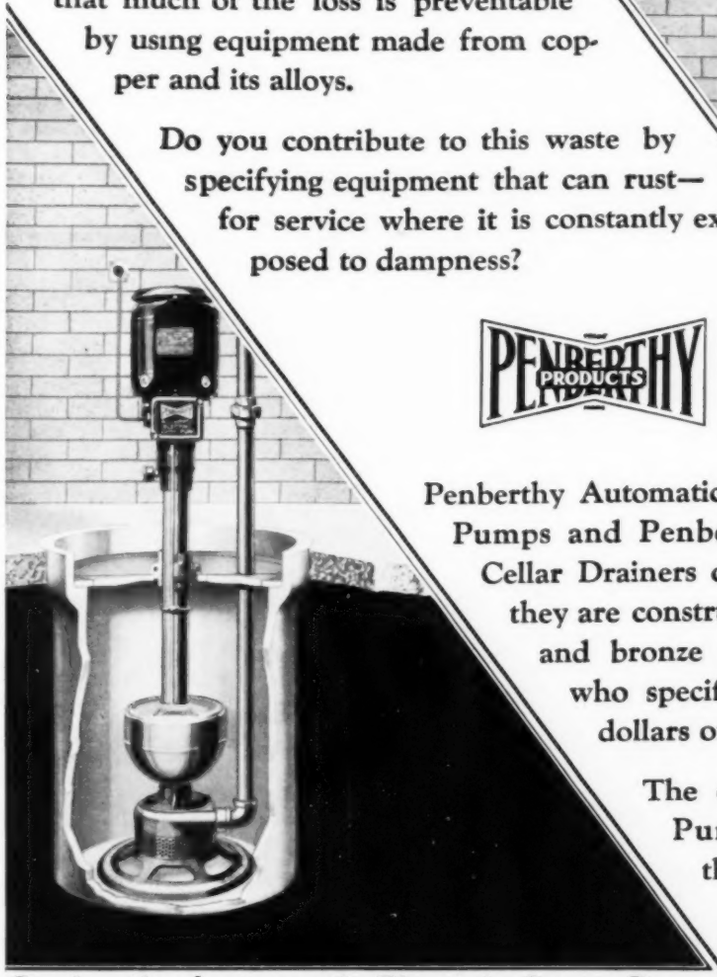
Are you responsible for a part of it?

The annual loss in the United States due to rust is estimated at $600,000,000. This figure is appalling—particularly when you realize that much of the loss is preventable by using equipment made from copper and its alloys.

Do you contribute to this waste by specifying equipment that can rust—for service where it is constantly exposed to dampness?

Penberthy Automatic Cellar Drainer





Penberthy Automatic Electric Sump Pump

PENBERTHY PRODUCTS

Penberthy Automatic Electric Sump Pumps and Penberthy Automatic Cellar Drainers cannot rust, because they are constructed of copper, brass and bronze throughout. Architects who specify them keep their clients' dollars out of the rust pile.

The operation of Penberthy Sump Pumps and Cellar Drainers is thoroughly dependable and economical. There is a size and type for every drainage requirement.

These Penberthy Pumps are quickly available—they are carried in stock by the leading jobbers throughout the country.

PENBERTHY INJECTOR COMPANY

ESTABLISHED IN 1886

DETROIT

CANADIAN PLANT WINDSOR, ONT.

NEWS IN BRIEF

FEWER WORKING HOURS TO RELIEVE UNEMPLOYMENT

To double the number of men employed, a working day of two shifts of five hours each in the construction industry is advocated by the California State Chamber of Commerce through the recently organized California Building Congress. Already inaugurated in San Francisco, the plan, its sponsors hope, will spread to other parts of the country.

The Congress has found that labor working five hours a day is actually producing more work per hour than on the eight-hour basis, according to Frederick H. Meyer of San Francisco, director of the American Institute of Architects, and chairman of the northern section of the Congress. Thus, he points out in an appeal for cooperation sent to all members of the Congress, the decreased labor cost will offset any charges resulting from the changing of shifts. The arrangement contemplates an intermission of half an hour between shifts.

STANDARD GRADING ADOPTED FOR FACE BRICK

Face brick has joined the growing list of building materials which are being sold under grading rules that protect both the buyer and the seller. At its annual meeting, the American Face Brick Association formally adopted standard grading rules that had been in process of preparation for more than a year and that will henceforth be used as the basis on which face brick are sold.

Four classifications are given in the rules: Uniform Shade, Mingled Shade, Substandard and Cull. All first quality brick are placed in the first two classifications, which have stringent requirements as to dimensional variations, chippage, color and warpage.

The rules as adopted are based upon the standardized sizes of brick which were established in 1923. At that time a size of 8″ x 3⅞″ x 2¼″ was made standard for smooth face brick, while a size of 8″ x 3¾″ x 2¼″ was made standard for rough-textured face brick. It was recognized then, as now, that it is impossible to manufacture brick conforming exactly to these sizes, but no limitations as to the variation in sizes were worked out. The new rules cover this point thoroughly.

NEW YORK STATE OFFICE BUILDING

The illustration of the State of New York Office Building, appearing on page 54 of the January issue, was credited to William E. Haugaard as architect. The credit line should have included Sullivan W. Jones as State Architect. The building was designed in the office of the State Architect while Mr. Jones held that position. Mr. Haugaard's connection with the building was that of Commissioner of Architecture.

WINNING DESIGN BY GUSTAVUS A. MANG

NEW YORK REGISTERED ARCHITECTS CERTIFICATE AWARDS

First prize of $100 for a design of a membership certificate in the Council of Registered Architects, State of New York, has been awarded to Gustavus A. Mang of Scarsdale, New York. The competition, in which architects and draftsmen of both sexes throughout the State were entered, was conducted by the Architects' Emergency Committee for the Region of New York to aid unemployed members of the profession.

Second prize went to Edmond J. Ryan of Chateaugay, New York; third prize to Weston Morley Geety, and fourth prize to Albert Kirschbaum, New York City.

The following received honorable mention:

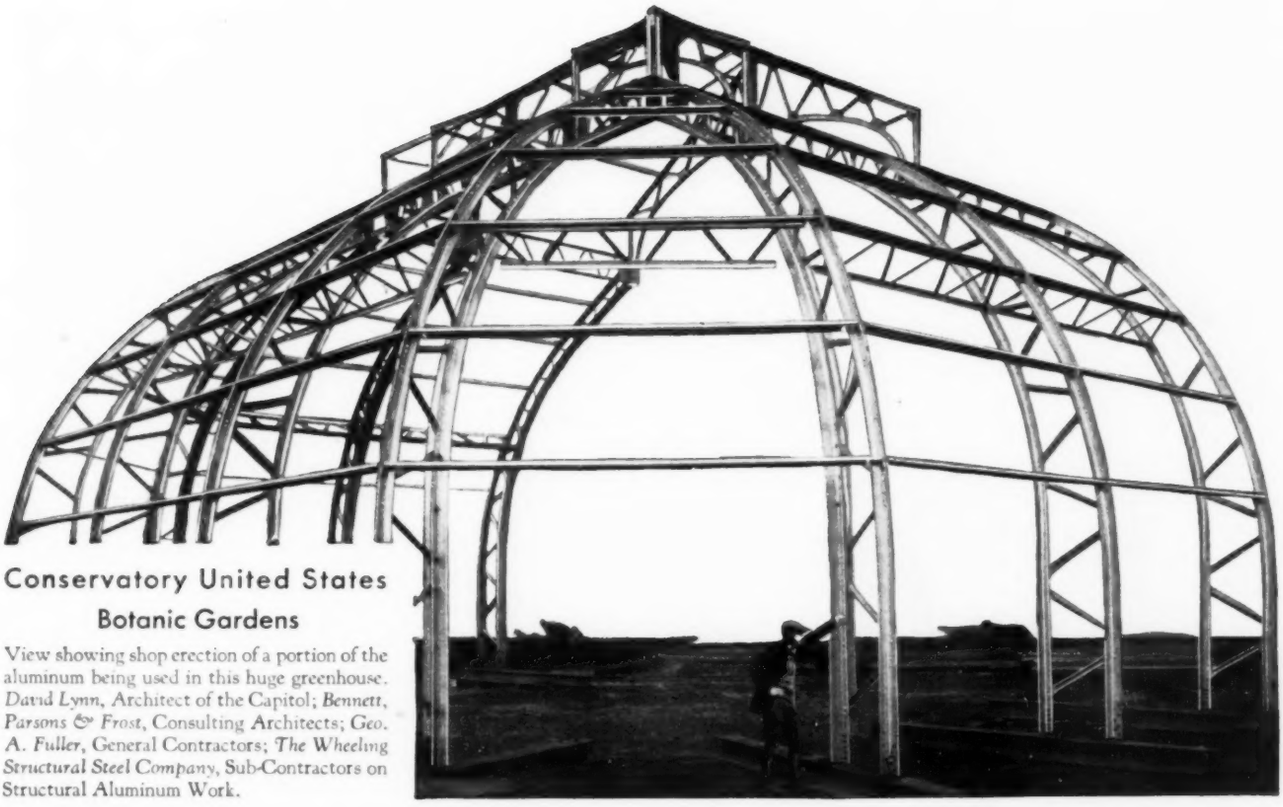
Mario Bianculli, Steven A. Bugaj, David Darrin, Frank E. Dopp, Harry B. Doppel, Peter Franceschi, George Jackson, Elving L. Johnson, Francis Kapp, Charles S. Lynch, Henry D. Menkes and Elias L. Ruiz.

The jury was composed of Julian Clarence Levi, chairman; H. VanBuren Magonigle, Frederick Mathesius, James F. Bly, William E. Haugaard, Elmer Adler, Chester Price and August Reuling.

ADVANCES IN ARCHITECTURAL PLANNING

Gains in architectural control were made by the nation in 1931, the outstanding example being that exercised in Washington, D. C., by the National Commission of Fine Arts, according to a report by Charles H. Cheney of Los Angeles, chairman of the Committee on City and Regional Planning of the American Institute of Architects.

The most notable planning advance of the year, Mr. Cheney says, is found in the regional plans adopted for the New York and Philadelphia districts after several years of study. Westchester County, New York, is said to present "the most remarkably finished and most beautiful parks and parkways developed during the year." Cincinnati is singled out for praise in city planning.



Conservatory United States Botanic Gardens

View showing shop erection of a portion of the aluminum being used in this huge greenhouse. *David Lynn*, Architect of the Capitol; *Bennett, Parsons & Frost*, Consulting Architects; *Geo. A. Fuller*, General Contractors; *The Wheeling Structural Steel Company*, Sub-Contractors on Structural Aluminum Work.

It costs a little more to use Alcoa Aluminum

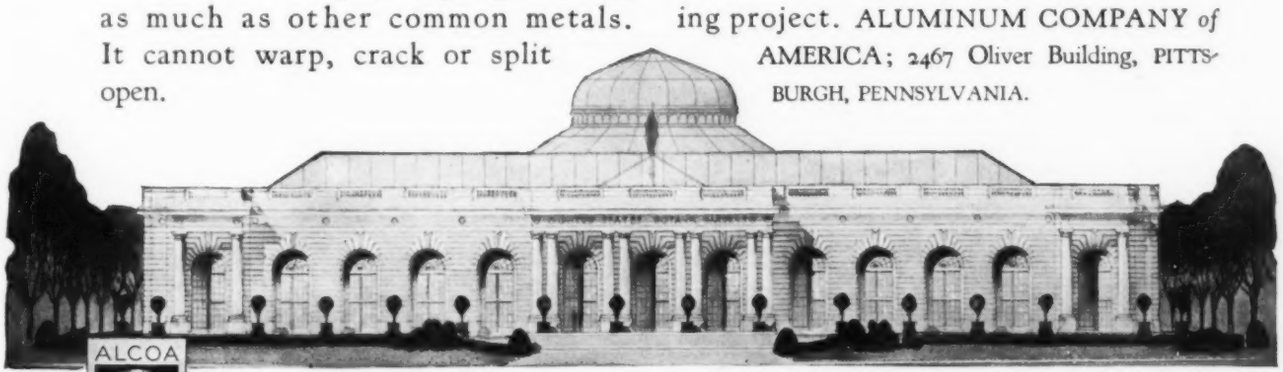
. . . . but it saves a lot in upkeep

The Botanic Gardens Conservatory is built to endure. Its large expanse of glass is supported by aluminum structural shapes—trusses, purlins and glazing bars. The specifications also include doors, grilles, flagpole bases and many other items of cast and extruded aluminum.

Alcoa Aluminum cannot rust. It will resist corrosion. It is light, weighing only 1/3 as much as other common metals. It cannot warp, crack or split open.

Architects find that the numerous advantages of Alcoa Aluminum recommend it for a multitude of uses. To obtain absolutely satisfactory architectural aluminum, specify Alcoa Aluminum and its alloys, made by Aluminum Company of America.

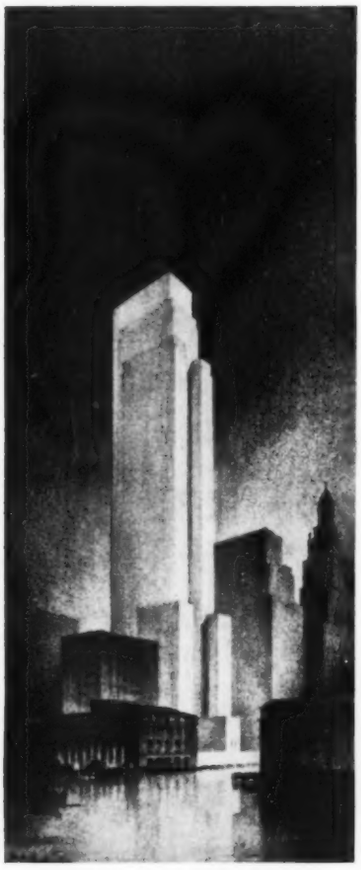
We urge you to accept the cooperation of our representatives in planning the use of Alcoa Aluminum in your next building project. ALUMINUM COMPANY *of* AMERICA; 2467 Oliver Building, PITTSBURGH, PENNSYLVANIA.



ALCOA

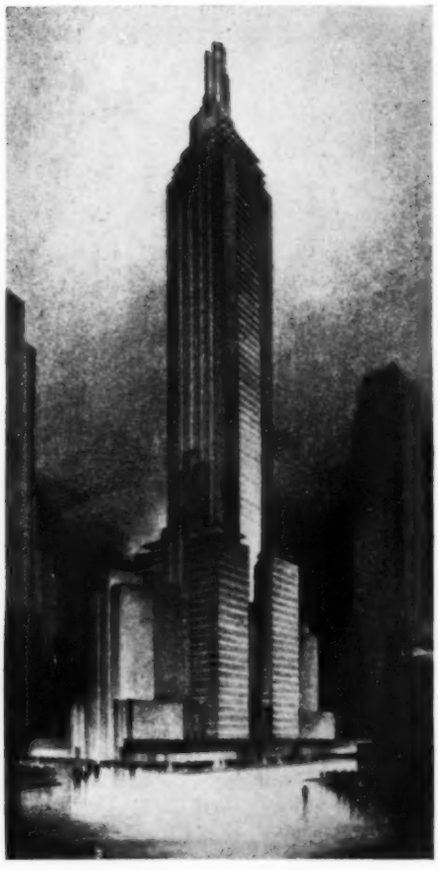
ALUMINUM

ALCOA ALUMINUM



Drawing by A. J. Frappier

H. Craig Severance, Inc., Architect
Rendering by Hugh L. Ferriss



Drawing by A. J. Frappier

PROPOSED NEW YORK REGIONAL PLAN LIMITATIONS ON BUILDING BULK

In the center is shown an example of present-day skyscraper architecture—the Bank of Manhattan Building on Wall Street. The part of the building below the tower is built up to the maximum bulk permitted by the present zoning ordinances. The Regional Plan proposals would permit buildings of this size or even a little larger, in central areas, but they would require a much greater area of plot. At left is a drawing of a building having the greatest bulk which would be permitted on a plot the same size as that of the Bank of Manhattan, and on the right is a drawing of a building of the same height and approximately the same bulk as the Bank of Manhattan, but on a plot nearly twice as large, which would be required for this bulk under the proposals of the Regional Plan.

LOCAL NEEDS BEST MET BY LOCAL ARCHITECTS, SAYS ACKERMAN

The standardized procedure of the Federal Government threatens to destroy regional traditions in American architecture, which should endure as a living record, Frederick L. Ackerman, New York architect, declares in an announcement issued by the American Institute of Architects. Mr. Ackerman urges the enactment by Congress of the bill introduced in the House by Representative Green of Florida to enlist private architects in the design of Federal buildings, and to confine the Office of the Supervising Architect of the Treasury Department to supervision (see pages 57-58, January issue of THE RECORD).

Greater competence and lower costs would result, according to Mr. Ackerman. A centralized bureau in Washington, he asserts, is hopelessly handicapped in its attempts to economize and to meet local needs.

MEDAL TO EMPIRE STATE BUILDING ARCHITECTS

The Medal of Honor for 1931 of the New York Chapter of the American Institute of Architects has been awarded to R. H. Shreve, William F. Lamb and Arthur Loomis Harmon, designers of the Empire State Building. The Medal, conferred since 1904, is given for "distinguished work and high professional standing."

"In the monumental design of a great office building they have made a genuine contribution to architecture," the citation reads. "The noble simplicity of this outstanding structure makes it an inspiring landmark in our city."

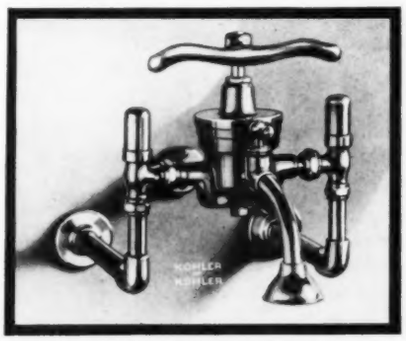
Stephen F. Voorhees, president of the Chapter, and chairman of the Jury for Medal of Honor, explained that, while the award is not based on work performed on any particular building, in the case of the winners the jury recognized their accomplishment in the Empire State Building.

KOHLER OF KOHLER ANNOUNCES A COMPLETE LINE OF HOSPITAL FIXTURES

ARCHITECTS will be glad to hear that from now on, Kohler will provide a *complete* line of hospital plumbing fixtures and fittings!

Continuous flow baths, surgeons' wash-up sinks, hydrotherapeutic showers, service sinks — every unit demanded in the modern hospital is included. All are designed to meet the requirements of leading physicians and surgeons. Each fixture and fitting is true to its purpose and scientifically correct.

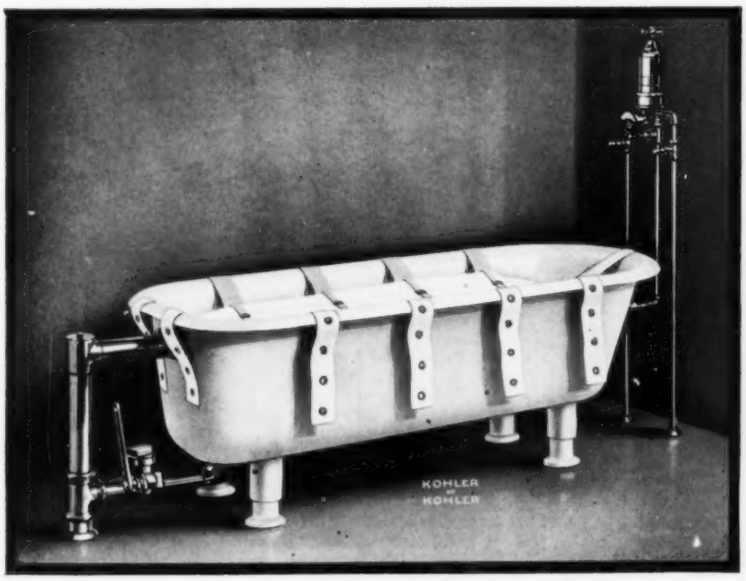
This is another good instance of the way that Kohler works together with architects. With the Kohler line, you can now specify almost any plumbing equipment needed anywhere.



H-13634 *Kohler Elbow Control Supply Fitting with Mixer*

Shipments arrive on the dot — saving time, money, check-ups. Kohler branches in leading cities mean that Kohler keeps a weather-eye open on each job, to the satisfaction of all concerned. We know what your problems are, and help you meet them.

Kohler Co. *Founded* 1873. Kohler, Wis.—*Shipping Point*, Sheboygan, Wis.—*Branches in principal cities*. . . . Look for the Kohler trade-mark on each fixture and fitting.



H-12500—*Kohler Enameled Continuous Flow Bath*

H-12818—*Kohler "Calvert" Vitreous China Lavatory with Knee Control Mixing Valve*

FOREST PRODUCTS LABORATORY AT MADISON, WISCONSIN—HOLABIRD AND ROOT, ARCHITECTS

This research laboratory building, U-shaped in plan, measures approximately 275 feet in length and over-all breadth. The ground floor and five stories contain a total area of approximately 175 square feet. Exterior walls are faced with Bedford limestone. Interior trim, including doors and window frames, is chiefly of wood. As a future development, it is planned to install wall panels and finish flooring in diffefent woods in the various rooms at a practical display of the many American forest species.

R. I. B. A. MEDAL AWARD

Dr. H. B. Berlage of Amsterdam has been awarded the 1932 Gold Medal for Architecture by the Royal Institute of British Architects. Dr. Berlage, who is now 75 years old, is a pioneer of the present-day architectural movement in Europe. His chief work is the Bourse in Amsterdam, a building which he designed in 1898 and which was the beginning of an architectural renaissance in Holland. He is still one of the most vigorous architects in Holland.

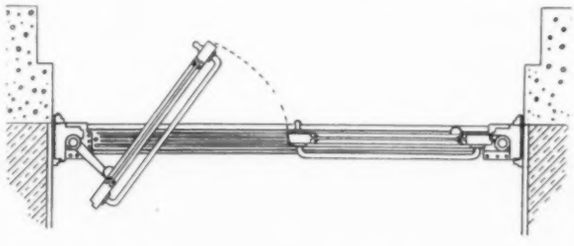
CONCEALED DOOR CLOSER

An invisible closer has been developed by the Yale & Towne Manufacturing Company. The new door closer is mortised like a lock into the top rail of the door. Although particularly adapted to metal doors which would be prepared at the factory to receive the closer, it can be applied with the use of side plates to wood doors 1¾ inches thick. If the wood doors are 2 inches or more in thickness, side plates are not necessary.

The closer is constructed of two compression springs applying their power to a spindle by means of two racks, one at each end of the closer; these racks are arranged so that the turning force is balanced, thus reducing the side thrust on the shaft bearings, with a high rate of efficiency. The closer uses a hydraulic checking cylinder. Two regulating screws located on top of the closer control the door through the main closing swing and at the latch. An outstanding feature of this construction is that the door can be opened a full swing of 180 degrees, flat back against the wall.

BALANCED DOOR CONSTRUCTION

This construction has been developed by the Ellison Bronze Company, Inc., of Jamestown, N. Y., for use at entrances and vestibules where there is a need for a door that can be easily opened against high pressure. In opening, one half of this door swings outward against the wind and the other half inward with the wind, so that the wind pressure is automatically counterbalanced at all angles from the closed to the wide-open position.



The door is similarly balanced against wind pressure from the inside of the building. A light spring conversion in the closer automatically closes the door tightly against wind action from both outside and inside.

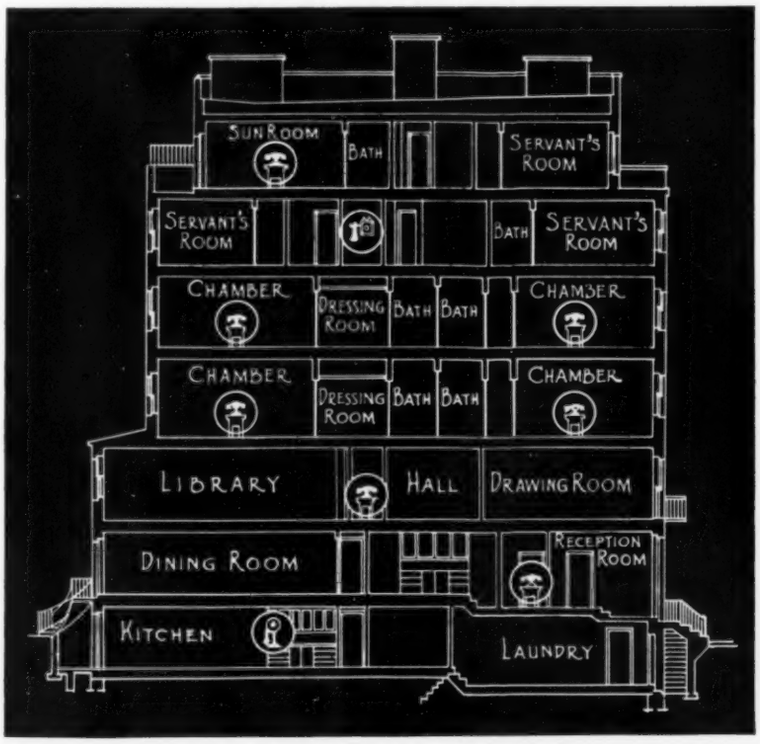
WOODWORK EXHIBITION

An exhibition of woodwork has recently been opened in Baltimore by the Morgan Millwork Company. The exhibits, which illustrate several architectural styles, are part of a program fostered by this company to emphasize to the public the importance of consulting architects in home planning and building.

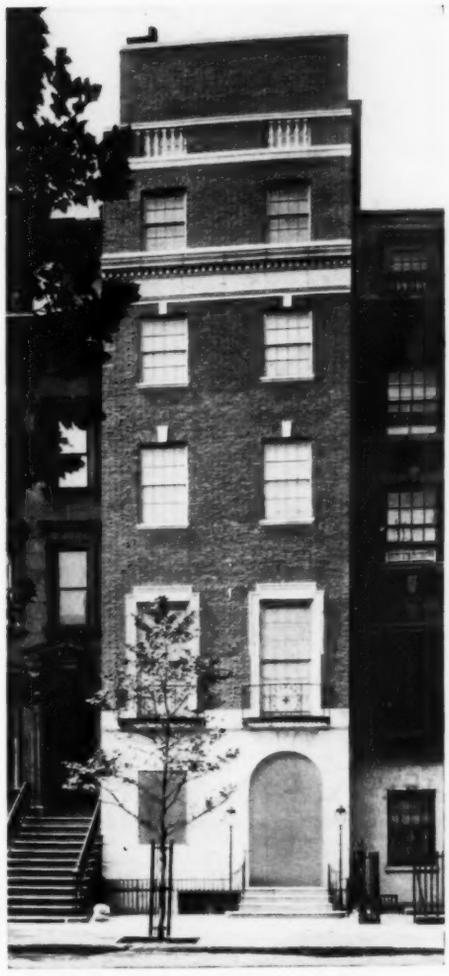
TELEPHONE COMFORT AND CONVENIENCE FOR YOUR CLIENT

EFFICIENT management of home or business today demands that ample provision be made for complete telephone communication. All built-in conduits and outlets should be included in the original specifications for a structure of any size or character, whether the recommendation is for a single extension telephone or for a private branch exchange.

Pre-planned arrangements of this kind will assure full convenience, allow for future expansion, conceal all wiring and protect against most types of service interruptions. This thoughtful planning on your part returns generous dividends in client satisfaction.



When provision has been made for adequate telephone facilities, the instruments can be conveniently located throughout the house as shown in the diagram above.



Provision for telephone convenience was built into this well-planned New York residence. EDWARD S. HEWITT, Architect; ROBERT JOHNSON, JR., Builder. *The diagram shows the arrangement of the telephones connected to a dial intercommunicating system, with 2 trunk lines and 9 stations, each one equipped to pick up or initiate central office or interior calls.*

A representative of your local telephone company will be glad to consult with you in regard to the telephone arrangements suited to the particular needs of any type of building. The service of these trained telephone engineers is offered you free of charge. Call the Business Office of your local telephone company.

Broadway Building, New York
Ely Jacques Kahn, Architect

Federal Building, Boston
Ralph Adams Cram, Architect

McGraw-Hill Building, New York
Raymond Hood, Architect

ARCHITECTS' LIBRARY

KIDDER-PARKER ARCHITECT'S AND BUILDER'S HANDBOOK. Harry Parker, editor-in-chief. Eighteenth edition. John Wiley & Sons. $8.

A new edition of that manual well-known in the building field as "Kidder's Handbook." It is the first complete revision since 1916 and consequently includes information on all the newest materials; in addition, it retains all those tables of information so necessary to the designer and builder. Although primarily designed as a reference book, the method of presentation is such that it can be used as a text book; however, unless the reader has some knowledge of engineering a good deal of the information would be meaningless. Taken as a whole, the architect and contractor are bound to find something in its 2247 pages that will help them solve almost any problem of design or construction. The fact that the associate editors include such authorities as George W. Baumeister, Herman Claude Berry, J. J. Cosgrove, Theodore Crane, Hardy Cross, R. P. Davis, Robins Fleming and seventeen others ranked as experts in their particular fields is sufficient evidence of its authenticity and accuracy. The book contains a good index.

APPLIED ARCHITECTURAL DRAWING. By Towne R. Abercrombie. The Bruce Publishing Company, Milwaukee, Wis. 156 pages, illustrated with photographs and drawings. $2.

A new textbook intended primarily for those pursuing architectural courses, this book is also a guide to all who are interested in house designing and planning or constructing their own homes.

CONTEMPORARY AMERICAN ARCHITECTS. Compiled by Arthur Tappan North. Published by Whittlesey House, a division of the McGraw-Hill Book Company, Inc., New York. Photographic plates, drawings and charts. Price $3 each, or $8 for the set of three volumes. (1) Raymond M. Hood. 120 pages, 95 pages illustrations. (2) Ralph Adams Cram. 120 pages, nearly 100 pages illustrations. (3) Ely Jacques Kahn. 122 pages, 90 pages illustrations.

This new series reviews the work performed by contemporary architects of such widely divergent tastes and talents as Raymond M. Hood, Ralph Adams Cram and Ely Jacques Kahn. Each volume contains a foreword by Arthur Tappan North. A brief biography outlines each architect's education, training, achievements, interests and personality. This is followed by a more detailed description of his art, the principles which govern it, his outstanding achievements, and particularly those buildings showing the salient characteristics of his style. The balance of each volume consists of full-page photographic plates, of drawings and plans, arranged chronologically or according to type of structure, in one case grouped to show collaboration with other architects. The illustrations have been carefully selected to cover a wide field of endeavor, and the accompanying text is informative.

AIRPORT RATING REGULATIONS. Aeronautics Bulletin No. 16, U. S. Dept. of Commerce. Pamphlet obtainable at the U. S. Government Printing Office, Washington, D. C. 29 pages. 10 cents.

This pamphlet contains essential information for airports. A listing of basic requirements which airports shall meet in order to receive a rating from the Secretary of Commerce is given in full, covering these points: (1) suitable landing area, (2)

JOHNSON Heat and Humidity Control

30 Johnson Branches Insure Convenient, Quick Service Anywhere, Any Time. Each Johnson Installation Made By Johnson Mechanics Only. Every Johnson Installation Given Annual inspection.

The All-Metal System, The All-perfect Graduated Control Of Valves And Damper. The Dual Thermostat (Two Temperature) or (Night And Day) Control, Fuel Saving 25 to 40 per cent.

ACCURACY · DEPENDABILITY · SERVICE

PERMANENCE

THE THOROUGHLY COMPLETE SYSTEM OF HEAT AND HUMIDITY CONTROL

The Johnson Thermostat on the wall of each room operates the valve on the heat supply of each room, automatically furnishing the temperature each room individually requires, and independent of all other rooms of the building. Included, are also Johnson Thermostats for controlling the valves and dampers of the building's ventilating system, and Johnson Humidostats for the control of the humidity. The Johnson system is the one accepted hygienically correct principle and mechanically right method of temperature regulation, the thoroughly complete system of control . . . . and installed in thousands of various buildings since 1885: its accuracy, dependability and permanence proven.

Gas Light Company Building, Milwaukee, Wisconsin. All direct radiation controlled by Johnson Dual (Night and Day) Thermostats: divided into 5 groups, each group controlled by Dual Clock, as follows: Basement; 1st, 2nd, 3rd floors; 4th, 5th, 6th and 17th floors: 8th, 9th, 12th, 15th and 16th floors; 11th and 12th floors; 13th and 14th floors: heat regulated night and day according to varying uses of each group of floors and rooms. Three supply ventilation (fan) systems are likewise Johnson Controlled.

Canada Permanent Building, Toronto, Canada. 101 room type Johnson Thermostats control 208 Sylphon radiator valves on direct radiators. Johnson 2-point multiple thermostat controls valves on tempering coils on ventilating system. Johnson 3-point multiple thermostat controls valves and bypass damper on reheater coils. Johnson pneumatic switches control fresh air and return air dampers and foul air dampers; Johnson insertion type humidostat for control of humidity.

JOHNSON SERVICE COMPANY

507 E. Michigan St. Established 1885 Milwaukee, Wis.

Albany	Cincinnati	Greensboro, N.C.	Philadelphia	Seattle
Atlanta	Cleveland	Indianapolis	Pittsburgh	Calgary, Alta.
Baltimore	Dallas	Kansas City	Portland	Montreal, Que.
Boston	Denver	Los Angeles	St. Louis	Winnipeg, Man.
Buffalo	Des Moines	Minneapolis	Salt Lake City	Toronto, Ont.
Chicago	Detroit	New York	San Francisco	Vancouver, B. C.

SERVICE

New Midwest Skyscraper selects A. P. W. Service

The A. P. W. Sanitary Washroom Service has been specified and installed in the new imposing office building of the Power and Light Company, Kansas City, Mo. All washrooms are equipped with A. P. W. Onliwon Toilet Tissue dispensing from Onliwon Chromium Finish Cabinets, and with A. P. W. Towels and Towel Cabinets.

Pioneers for Cleanliness since 1877

A. P. W.

TRADE-MARK REGISTERED IN U. S. PATENT OFFICE

A. P. W. PAPER CO., Albany, N. Y. AR-2-32

Please send, free, the new and complete catalogue of A. P. W. Cabinets and Fixtures.

Name.....

Address.....

City.....State.....

freedom from obstructions, (3) accessibility, (4) wind direction indicator, (5) markings, (6) runways, (7) drainage, (8) fuel, communication, transportation and personnel.

The paragraph on runways is selected as a typical illustration of the text:

"Runways shall be constructed of crushed stone, crushed slag, or other wear-resisting material, used in conjunction with a suitable binder, in such a manner as to give a smooth, firm, uniform surface. . . . Runways shall be so designed and constructed as to withstand safely the loads to which they will ordinarily be subjected. They shall permit safe landing and taking off of airplanes under all weather conditions and shall be not less than 100 feet in width. The distance from the center line of any runway to the nearest paralleling edge of the landing area shall be at least 200 feet. The runways may be given a slight crown, either positive or negative as may be desired to facilitate surface drainage. (It is recommended that crown should not exceed 6 inches per 100 feet of width. Generally 3 or 4 inches per 100 feet of width will suffice.) The edges of the runways shall be flush with the adjacent surfaces of the field and either transition strips of some granular material, such as crushed stone or crushed slag, used in conjunction with a proper binder, or other suitable means shall be provided to insure the safe landing and taxiing of planes across the runways in any direction."

BUILDING TRENDS INDICATED BY THE FEDERAL CENSUS

By L. Seth Schnitman

(*Continued from page* 144, *editorial section*)

future unfolds, society's debt to itself will be liquidated more fully than ever before.

It is here that the architect can make lasting contribution to the cause of social advancement. So long as the hospital, the asylum, or the home for the aged is designed and planned on the basis of so many beds, just so long will these institutions continue to fall short of their functional purposes. In essence the hospital, the asylum and the home for the aged are residential projects to meet a particularized demand for shelter, comfort, surroundings and environment. As the social changes become more pressing, as the economic developments which lie ahead come to light, as government more completely recognizes its paternal responsibility, then may we expect to see new ideas of hospitalization translate themselves into suitable projects to meet the needs for particularized shelter —not so many beds, but rather so many housing units to meet a specific condition.

Essentially, therefore, this is the era in architecture that demands liberalization—in truth it is the time for liberalized specialization. It no longer suffices to be an architect, a specialist on the design of this or that structural type. The time has arrived when the architect must know something of the science of society, something of psychology,

Protecting building investments

SPENCER CENTRAL CLEANING SYSTEM

THE Spencer Central Cleaning System is a form of insurance. It removes dirt and dust so thoroughly that the wear on floors, rugs, walls and decorations is reduced to a minimum. It makes the inside of the building and all of its furnishings last longer.

It also protects the building investment by reducing cleaning costs and by keeping the building attractive to high class tenants.

Complete information for architects, building owners and building managers on the Central Vacuum Cleaning System is contained in our bulletins—yours on request.

THE SPENCER TURBINE CO.
HARTFORD, CONNECTICUT

5424

L E A D

The simplest formula for eliminating paint troubles . . . specify high-lead-content paints, preferably *pure* lead. For lasting satisfaction and long-time economy.

EAGLE

Reg. U. S. Pat. Off.

White Lead

Made by The Eagle-Picher Lead Company, General Offices: Cincinnati. Producers also of Eagle Red Lead, Eagle Lead Pipe and Fittings, and many lead, zinc and allied products.

something of psychiatry, something of all the sciences which bear upon the broader aspects of design and the requirements of a people accustomed to an ever-rising living standard.

During the 10-year period from 1921 to 1930, inclusive, expenditures for new hospital buildings and institutions throughout the United States aggregated approximately $1,400,000,000, based upon data from F. W. Dodge Corporation. Of this amount about $425,000,000 was expended in the 13 cities in the United States which in 1930 had 500,000 or more inhabitants. Thus it will be seen that approximately 30 per cent of total expenditures for new hospitals and institutions were centered in our 13 largest cities; these are the cities which in 1930 accounted for only 17 per cent of our entire population.

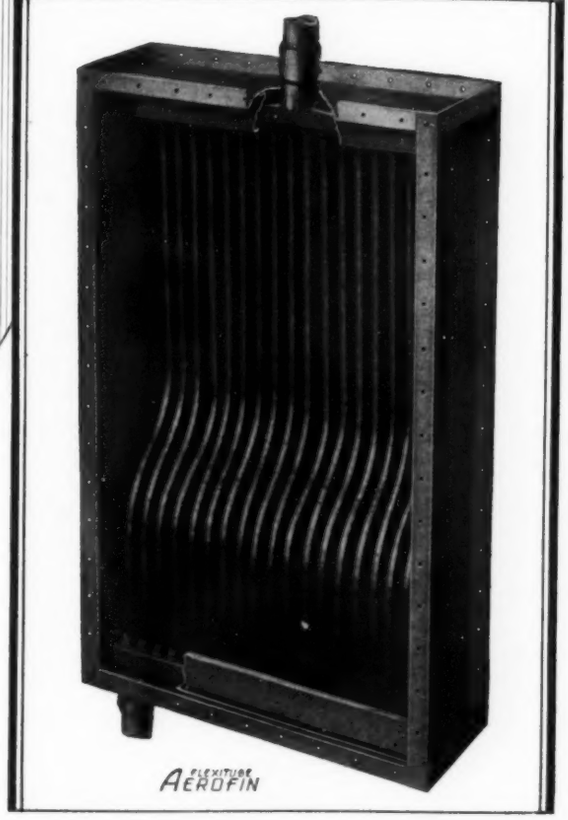
To put it still another way, 70 per cent of our expenditures for new hospitals and institutions were made in the cities and towns where 83 per cent of the entire population made their homes. Inferentially, therefore, it may be said that in our smaller cities and towns a large need exists for better hospital facilities and better institutions to cope with their growing problems.

For each new housing unit constructed throughout the country during the decade that ended in 1930 ($5,000 of residential building was used as a housing unit on the assumption that this approximates the value of each new housing unit constructed during the period), $285 was spent on new hospitals and institutions. It now appears that for the current decade which will end with 1940, approximately the same relationship to residential building will hold; in fact it is likely that upwards of $300 may be expended for hospitals and institutions for each new housing unit, if we may look for larger activity in our smaller cities occasioned by pressing demands for hospitalization and for homes to take care of our aged and infirm.

Society will one day find an even better way than now to care for its sick and infirm; it will find a way of providing shelter and comfort to our aged along the lines that perhaps at this moment might appear Utopian. But we must now methodically plan our communities with proper regard not only for economic but indeed for social considerations.

The slowing-up of building from the hectic days of 1928 has at least given more time to appraise soberly some of the causes which brought about the cycle of feast and famine. If we have gained nothing more than a catholic understanding of society's growing problems, then indeed we will at least have learned some of its newer needs. Out of this should come an advanced conception of the purposes and functions of the hospital, the home for the aged, the institution.

All in all, the transition from the "perambulator stage to the wheel-chair era" in our society will, in all probability, produce a new demand for particularized shelter that should to some degree offset the decline which appears presaged for residential building because of the striking changes that are taking place in our population growth rate and in the age composition of our people.



We announce

a new, improved, advanced Fan System Heat-Surface

FLEXITUBE AEROFIN

EMBODYING all of the time-proved AEROFIN advantages—standardized, light-weight, non-corrodible Units—*plus flexible* off-set tubes, single-pass, header-to-header construction, high-temperature-*brazed* tube joints stronger than tubes themselves, guaranteed for pressures from one to 200 lbs., temperatures to 388° F. FLEXITUBE AEROFIN supplants the former LOW PRESSURE AEROFIN and will, we believe, eventually supplant UNIVERSAL AEROFIN, also.

FLEXITUBE AEROFIN is available in 13 Tube Lengths, 5 Series, (as explained in Bulletin), thus 65 sizes, all in the standardized AEROFIN casing (Nominal Tube Length plus 8½ in. x 29 in. x 10 in. deep), interchangeable with former LOW PRESSURE AEROFIN.

Complete descriptive and technical Data are presented in our new Bulletin No. 32 which Newark will be glad to mail, gratis, upon request.

We announce, also, new and improved BOOSTER UNITS AEROFIN, 6 sizes, for capacities from 150 to 1624 c.f.m., pressures up to 200 lbs., for either horizontal or vertical air flow. These Units are ideally adapted for Booster service—either heating, with steam, or cooling, with cold water.

Complete information covering BOOSTER UNITS AEROFIN also in Bulletin No. 32, which every Architect, Engineer or Contractor should request from Newark at once.

Any AEROFIN OFFICE will cooperate.

AEROFIN CORPORATION

850 Frelinghuysen Avenue, NEWARK, N. J.

Burnham Bldg. CHICAGO

11 West 42nd Street, NEW YORK

United Artists Building DETROIT

Land Title Bldg. PHILADELPHIA

AEROFIN is sold only by Manufacturers of Nationally Advertised Fan System Apparatus.

List upon Request

BREEZES

DO YOUR WORST—

You can't hurt this window shade

IT'S a du Pont Tontine washable window shade. Whipping in the breeze won't fray or crack it. Sun won't fade it. Rain can't spoil it. When a Tontine shade gets soiled, just scrub it.

Tontine shades mean a real saving in replacement costs. They last for years—and always look well. They're impregnated with pyroxylin. That's why they are scrubbable and so durable.

For complete window-shade satisfaction have your Tontine shades mounted on guaranteed Tontine Rollers.

Would you like to see samples of Tontine shade cloth? Your name and address on the coupon below will bring a selection to you.

DU PONT TONTINE

REG. U.S. PAT. OFF.

(PRONOUNCED TON-TEEN)

THE *WASHABLE* WINDOW SHADE

NEW YORK CENTRAL R. R. CO. BUILDING

New York City

This magnificent office building is equipped throughout with Tontine Window Shades. When they get soiled, they're scrubbed clean—which keeps them in fine shape. And saves replacement costs.

E. I. du Pont de Nemours & Co., Inc., 100 Du Pont Ave., Newburgh, N. Y.

Kindly send me a selection of Tontine washable window shade samples. Canadian subscribers should address: Canadian Industries Limited, Fabrikoid Division, New Toronto, Ontario, Canada. A-1

Name_____

Address_____

Consult the Classified Business Directory of your telephone book for the authorized Tontine Dealer in your city, selected for his reliability.

AN ALL-METAL OFFICE BUILDING IN RICHMOND

By James Bolton, Department of Public Works, Richmond, Va.

(*Continued from page 122, editorial section*)

below the basement floor level. The girders for the first and second floors run crosswise; those for the roof run lengthwise. The exterior columns are also connected by girts of 5″ x 5″, 18.9-pound H's immediately above and below the window levels, except on the front and rear elevations of the second floor. Here, the top girt has been omitted and the roof girder serves in a dual capacity.

The floors are designed for a live load of 80 pounds per square foot, and the roof for a live load of 30 pounds per square foot. Lattice-type joists, bolted at the top and bottom to the structural girders, are used for both the floor and roof beams; while formed steel plate, attached to joists by means of bolts, serve as the floor and roof decking.

The roof is covered with 5-ply slag roofing on insulated boards cemented to the steel decking; the floors with 3 inches of gypsum poured in place and unreinforced, the system of underfloor ducts determining the depth of gypsum. As constructed, the floors have a dead load of 20 pounds per square foot, and the roof, a dead load of 15 pounds per square foot.

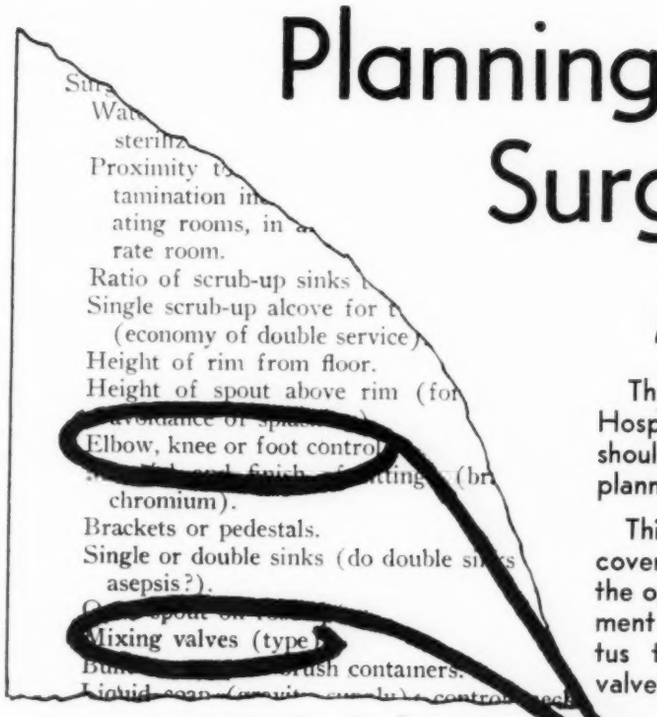
The wind bracing consists of two 2½″x2½″ x 5/16″ angles crossed and bolted to the corner columns and horizontal girts on all four elevations at both floor levels. A kneebrace of angle iron, 18 inches in length, ties the first row of interior columns from each end to the structural girders on the first floor; a channel iron serves as a bracing between the bottom chord of the roof joists and the columns on the second floor.

The use of metal in the façades of the building combines sound engineering judgment with the definite economic trend taking place in contemporary architecture. In this new building the façades, composed of an inner and outer wall of aluminum, are from 3½ to 7 inches thick; together with the

MAIN FLOOR PLAN

All-Metal Building Designed and Erected by Department of Public Works, Richmond, Va.

Planning the Surgical Facilities in the MODERN HOSPITAL


Proximity t
tamination in
ating rooms, in
rate room.
Ratio of scrub-up sinks
Single scrub-up alcove for
(economy of double service)
Height of rim from floor.
Height of spout above rim (for
Elbow, knee or foot control
(br
chromium).
Brackets or pedestals.
Single or double sinks (do double s
asepsis?).
Mixing valves (type
rush containers.

Section of Checking List from Dr. Goldwater's article on page 141

The article by Dr. S. S. Goldwater, the noted Hospital Consultant, on page 138 of this magazine should prove of great interest and help to Architects planning hospitals.

This article provides a comprehensive checking list covering, not only the number, size and location of the operating rooms, but all of the permanent equipment required, from heating and ventilating apparatus to floor and wall materials, toilets, mixing valves, etc.

The Leonard Type L-9 Valve, here illustrated, fills the requirement listed in Dr. Goldwater's article. This valve is especially designed for use with Surgeon's scrub sinks and can be specified for either elbow, knee or foot control.

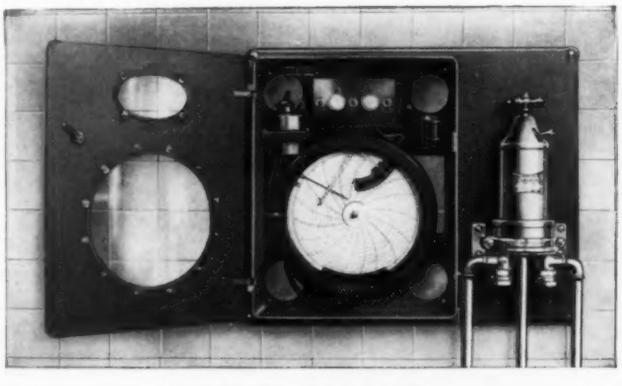
In addition to the above, every need of the modern hospital can be met by Leonard Thermostatic Water Mixing Valves. Hundreds of satisfactory installations in hospitals throughout the country attest their mechanical excellence, superior quality and dependability.

L-9 Valve with Elbow Control

The LEONARD
Type L-9 Valve

SPECIFY Type L-9 Valve for use with surgeon's scrub sinks (elbow, knee or foot control) for controlling temperatures.

Levers are adjustable for any position and operate by slight pressure. For knee control, valve is set horizontal under sink and furnished with scale which is visible when valve is in position—adaptable to any stock fixture. For foot control, valve is furnished complete with floor bracket and foot levers.



The Hydriatric Suite Assembly.

LEONARD HYDRIATRIC SUITE

Reg. U. S. Pat. Off.

Specify the Leonard Hydriatric Suite for use on continuous flow baths.

This apparatus consists of a recording thermometer to which is attached a Leonard patented electrical apparatus which consists of alarm lights, chime and buzzer. This apparatus in connection with the Model H Hydriatric Valve, which maintains constant temperature in the tub on a flow of one gallon per minute, produces a record of the bath temperature which is an important link in the patient's treatment record.

The electrical units operate on 16 volts, the house current being stepped down through a transformer furnished with the Suite. No danger of electric shocks to the operator.

Blue-prints and full installation details furnished on request.

Write for Catalogue "C" (Standard A.I.A. file Size) and see our Catalogue in Sweet's

LEONARD-ROOKE COMPANY

ELMWOOD STATION PROVIDENCE, R. I.

·TRUSCON The Most Complete Line·

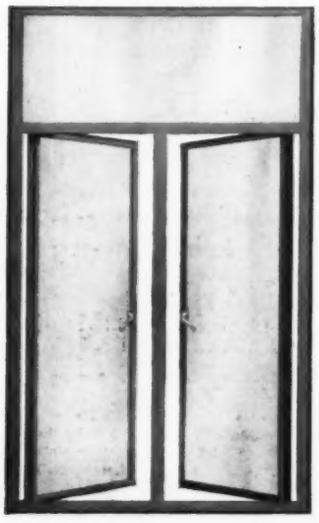
Casements of Steel and Aluminum

Modern Types for Every Building

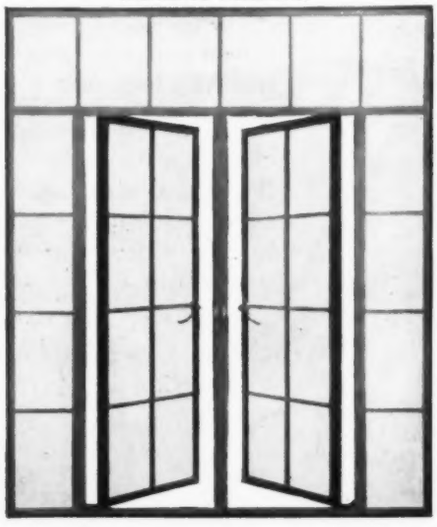
Truscon steel and aluminum casements are of three types—residence, architectural and monumental—designed to meet the individual requirements of any building. All types are distinctive for high quality, improved features and practical utility. Details of screening, operation and hardware provide complete and lasting satisfaction. Full information, catalogs and suggestions gladly supplied.

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO

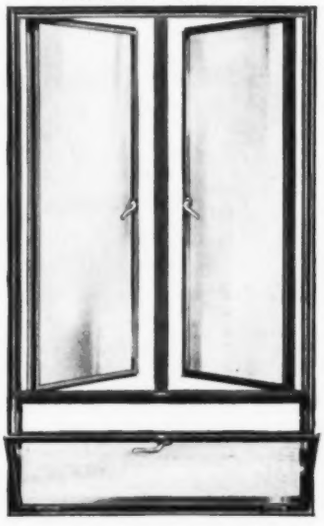
Architectural Casements



Residence Casements



Monumental Casements



insulating material, they average less than 10 pounds to the square foot. The basement walls of concrete offer a good comparison; these are 10 inches thick and average 120 pounds per square foot.

The aluminum pilaster columns, which were shop assembled, consist of a frame of extruded sections and panels of ⅛" plate. They are 25 feet high, 3 feet wide and weigh approximately 250 pounds. The vertical members of the frame are one piece, thus simplifying the fabrication of the column as a whole. The joints between the horizontal and vertical members are welded. The panel sections, 6 feet in length, fit into grooves in the molding. The four sections are tied together by means of countersunk aluminum bolts through a 1" offset at the top of each of the three lower sections. A piece of aluminum sheet, welded on the back of each of the upper plates, fits over the offset joints and completes the water seal.

The drop-panel columns rest on a precast masonry base and are locked to the structural girts with steel retainer clips. These clips, bowed in shape, fit into the recess sections of the extruded members of the pilaster and provide for expansion in the columns as a whole without permitting undue lateral motion. A sheet aluminum capital is fastened to the lower member of the entablature and fits over the top of the pilaster column in such a way that it conceals it and permits expansion and contraction in the column.

The steel sash are anchored at the jambs to structural steel angles which form a supporting frame for the attachment of the sheet aluminum interior columns and exterior trim as well as the steel sash. The exterior trim between the window columns and pilasters consists of satin-finished aluminum sheet. This is held in place by an extruded section bolted to the supporting frame of the window sash and an aluminum angle fastened to the extruded member of the pilaster column.

The window sills are formed by filling the lower girt on each floor with gypsum; sheet aluminum, fastened to the girt and to a wooden member at the edge of the gypsum underflooring, forms the wall beneath. The wall above the windows consists merely of a piece of aluminum sheet fastened to the expanded metal lath of the ceiling, bent around the upper girt, and connected to the lintel member of the windows.

The building is capped with a 3' 10½" paneled aluminum entablature, using the same extruded sections that were used in forming the pilasters. These are erected in 10-foot lengths and attached by steel clips to the structural columns and to two 5", 6.5-pound channels, spaced equally between the bays. At the junction of two pieces a wooden block, covered with sheet aluminum and of the same contour as the inside of the extruded member, fits into them and holds them in rigid alignment. The panels, which fit into the grooves in the extruded members, are of 13-gauge (B&S) aluminum

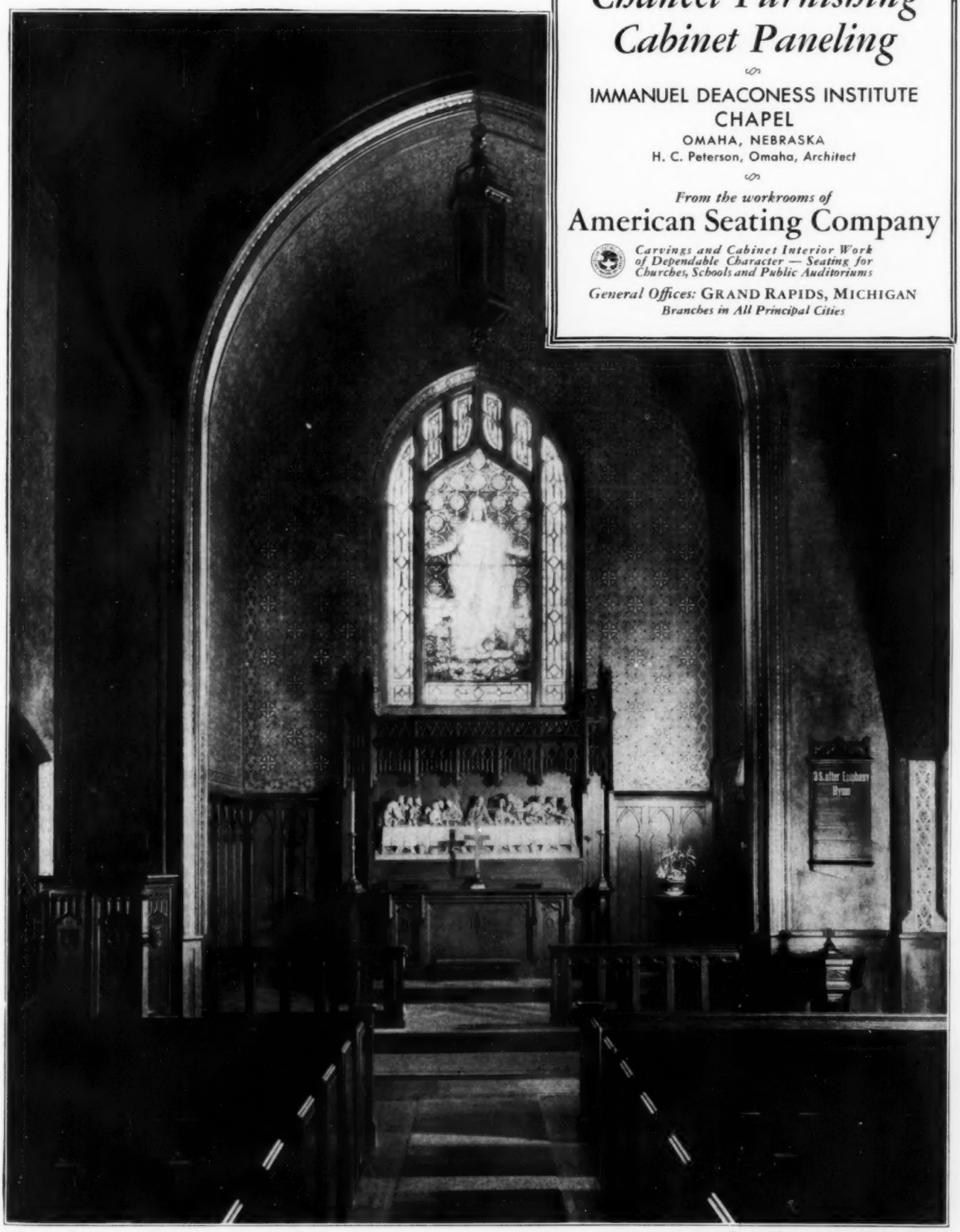
Pew Seating
Chancel Furnishing
Cabinet Paneling

IMMANUEL DEACONESS INSTITUTE
CHAPEL
OMAHA, NEBRASKA
H. C. Peterson, Omaha, Architect

From the workrooms of
American Seating Company

Carvings and Cabinet Interior Work of Dependable Character — Seating for Churches, Schools and Public Auditoriums

General Offices: GRAND RAPIDS, MICHIGAN
Branches in All Principal Cities



American Seating Company, Grand Rapids, Michigan

Rome
CONVECTORS
are built

UP TO A STANDARD . . .
NOT DOWN TO A PRICE

Rome Radiation Company, a Division of Revere Copper and Brass Incorporated, devotes its entire resources and enlarged manufacturing facilities to producing its quality concealed heating units . . . ROCOP and ROBRAS Convectors.

No Compromise with Quality

Rome Radiation has consistently refused to be stampeded into sacrificing quality for price. On the contrary, Rome is building its Convectors up to an even higher standard of quality than ever.

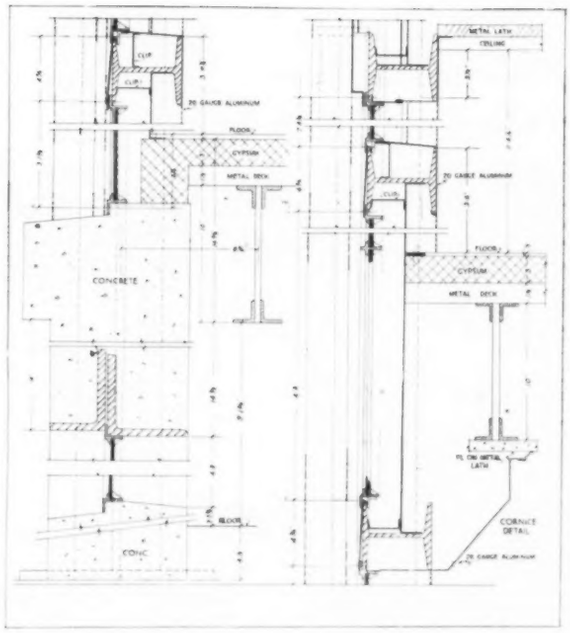
Standard Types and Sizes for concealed heating

In addition, Rome Radiation has standardized its Rocop Convectors as to types, sizes (of which there are 21) and methods of installation. This standardization was arrived at only after exhaustive researches and consultation with leading authorities had shown that such standardization would be a real service to building construction . . . by meeting all requirements, by simplifying estimating and installation, by eliminating errors and delays. Robras Convectors are available in a wider variety of types and sizes including types and sizes for out-of-the-ordinary requirements.

Architects specifying Rome Convectors are assured not only of quality, but also of real economy . . . a direct result of standardization.

For further information about design and construction details, tables of capacities and weights, dimension diagrams, etc., send for the ROBRAS and ROCOP Bulletins.

Rome
Radiation Company
DIVISION OF
Revere Copper *and* Brass Incorporated
ROME, N. Y.



WALL CONSTRUCTION DETAILS

All-Metal Building Designed and Erected by Department of Public Works, Richmond, Va.

sheet. They are erected in 8′ 3″ lengths fastened together by means of double lock joints. Expansion in the entablature as a whole is taken care of by enlarging the bolt holes in the steel clips which hold the extruded sections in place.

The satin-finished aluminum trim between the base of the entablature and the top of the windows is applied in an identical manner to that on the sides of the windows. A sheet aluminum coping, bolted to the upper section of the entablature, extends over it and forms a water seal for the 20-gauge steel counter flashing.

The insulating material was blown into the space between the outer and inner walls prior to the completion of the entablature. It extends from the first floor line to a point approximately 1 foot above the roof girders. Tests have shown that a 3½″ double metal wall, insulated in this manner, has a heat loss of approximately 0.075 B.t.u. which is the equivalent of the heat loss in a 48″ brick wall.

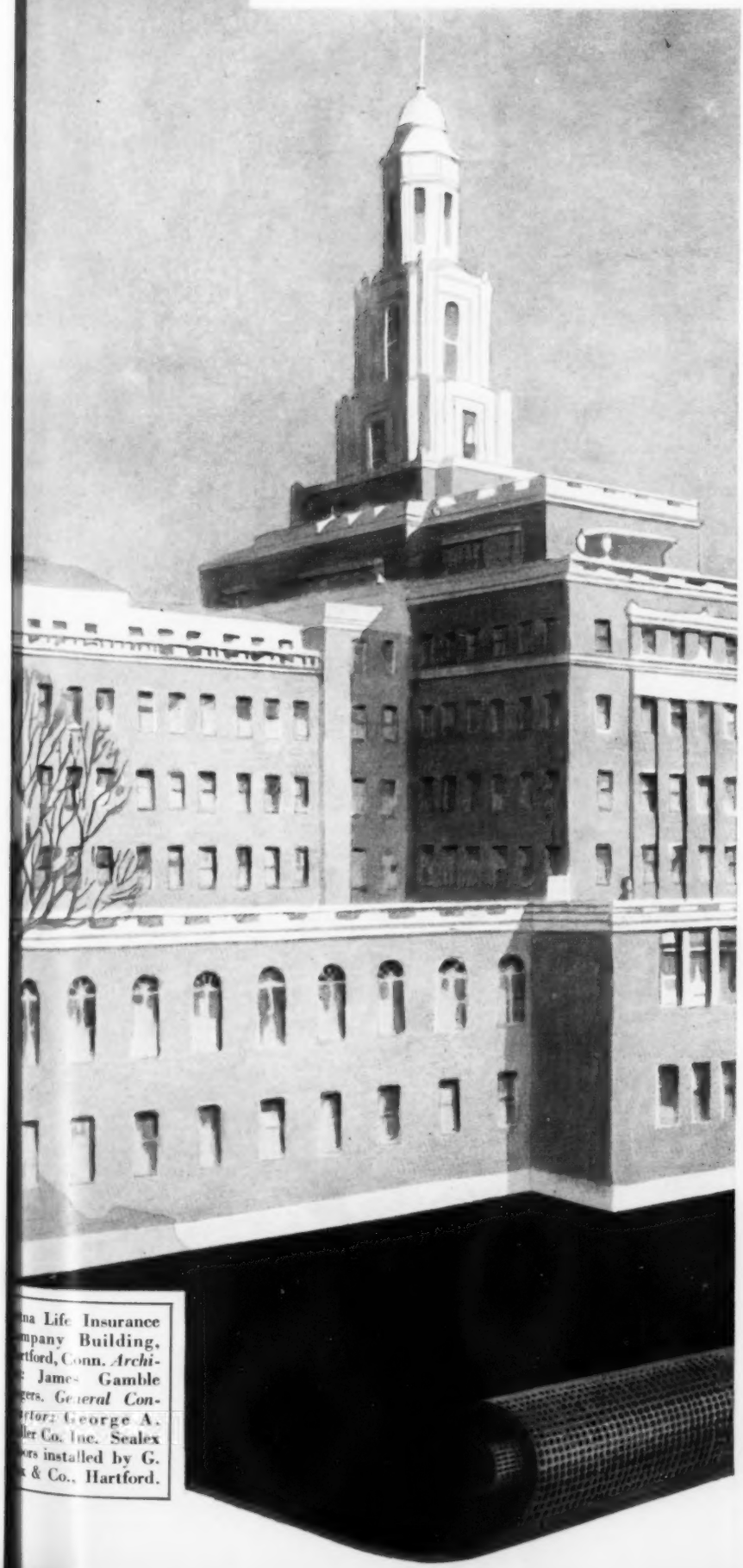
The heating system for the building is a single-pipe steam system using, for fuel, gas manufactured by the city. The steam pipes, as well as the hot and cold water pipes and the conduit for telephone and electric wires, run along the exterior columns between the outer and inner walls. At the first and second floor levels, the steam, hot and cold water pipes and telephone conduit are embedded in the gypsum underfloor covering; the electrical conduit runs through the lattice-type floor and roof joists.

The building was completed 4½ months after excavation was begun. The plans for the building were prepared in the Department of Public Works (Col. R. Keith Compton, Director) by W. A. Childrey of the Bureau of Surveys and Design.

(CONTINUED ON PAGE 56)

ÆTNA and 88 other

insurance companies choose Sealex . . .



tna Life Insurance mpany Building, rtford, Conn. *Archi-* James Gamble gers. *General Con-* rtford: George A. ller Co. Inc. Sealex rs installed by G. & Co., Hartford.

When we took our insurance exams, they did not ask us if our great grandfather ever suffered from fallen arches . . . but they did demand *proof* that Sealex is the long-lived business floor. Great insurance companies investigate thoroughly before they decide that a floor is a "preferred risk"—the *preferred buy* for their own offices.

For example, Aetna and their architects spent upwards of a year trying to find a better floor than Sealex for the same money—or as good a floor for less. It couldn't be done. Aetna ended by purchasing over 270,000 square feet of Sealex Linoleum.

To land orders of this magnitude, a floor must possess not one or two but many points of superiority. Resilient Sealex Floors are quiet and comfortable to walk on—increasers of employee efficiency. They're hard to wear out but easy to maintain—decreasers of overhead expense. Owners of Sealex Floors never receive bills for refinishing, never pay one cent for painting or scraping. An occasional light waxing keeps these floors in the pink of condition.

Yet this maintenance economy is not offered as an excuse for high first cost. Sealex Floors cost no more (often cost less) than floors that need constant renewing. Recent price reductions make Sealex a better specification than ever. (*See next page*)

SEALEX

LINOLEUM FLOORS

Sealex No. 1253

Sealex No. 1256

Sealex No. 1252

Sealex No. 1002

Sealex No. 1004

Sealex No. 1003

Acres and acres of Sealex Linoleum Floors are giving all-round satisfaction to such nationally known insurance companies as:

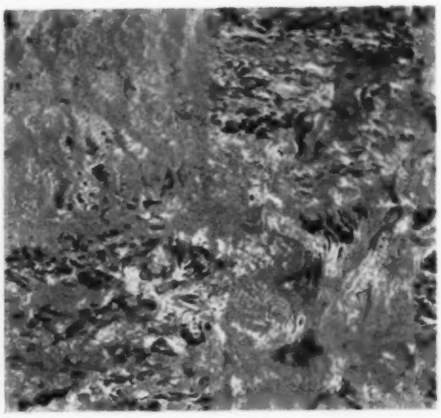
American . . . American Mutual . . . American National . . . Atlas Assurance . . . Commerce Casualty . . . Connecticut General Life . . . Connecticut Mutual Life . . . Continental . . . Equitable Life Assurance . . . John Hancock . . . Home . . . Hartford Accident . . . Hartford Fire . . . Home Title . . . Kansas City Life . . . Liverpool, London & Globe . . . London & Lancashire . . . Maryland Casualty . . . Metropolitan Casualty . . . Metropolitan Life . . . Mutual Benefit Life . . . National Fire . . . New York Life . . . Northern Assurance . . . Pacific Fire . . . Pennsylvania Company for Ins. on Lives & Granting Annuities . . . Phoenix . . . Provident Mutual Life . . . Prudential . . . Royal . . . Royal Indemnity . . . Security . . . Sun Indemnity . . . Sun Life Assurance . . . Travelers . . . *and many others.*

•

Many types of ready-made designs are offered in Sealex Floorings—a few are shown here. There are occasions, however, when architects prefer to create their own designs, using two or more Sealex colors. The different elements specified are expertly cut out by hand and then pieced together like a jig-saw puzzle. For full information about Sealex materials and about our Bonded Floors installation service — Sealex Floors backed by a guaranty bond—write our Architectural Service Department.

CONGOLEUM-NAIRN INC., KEARNY, N. J.

"DELPHI"—Sealex Veltone Linoleum No. 2952

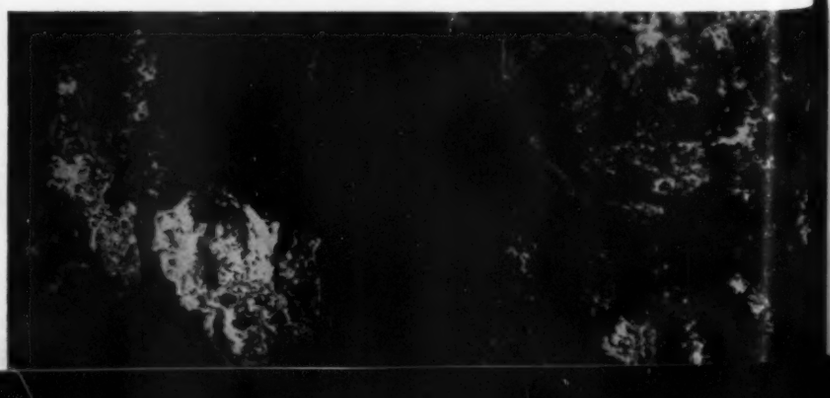


"ELDORADO"—Sealex Linoleum No. 3222

"ROMANO"—Sealex Linoleum

"RIVIERA"—Sealex Veltone Linoleum No. 2953

"NOCTURNE"—Sealex Veltone Linoleum No. 2955



fine Glass . .

Libbey·Owens·Ford Polished Plate Glass used throughout Camden City Hall and Court House. Architects: Edwards & Green, Camden, N. J. Glazing Contractor: F. W. Mark Construction Co., Philadelphia.

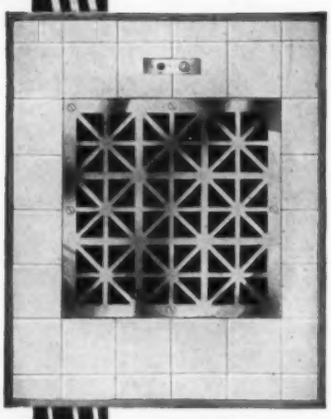
lends majesty to fine design

The majestic simplicity of modern architectural creations emphasizes the need for the finest quality materials throughout, for each element is brought doubly into prominence as non-essential detail is reduced to a minimum. Glass becomes an ever more important consideration and the sparkling polish and uniform quality of Libbey·Owens·Ford Polished Plate Glass are factors of increasing influence upon the cumulative effect of design and materials.

LIBBEY·OWENS·FORD QUALITY GLASS

Manufacturers of Highest Quality Flat Drawn Window Glass, Polished Plate Glass and Safety Glass; also distributors of Figured and Wire Glass manufactured by the Blue Ridge Glass Corporation of Kingsport, Tennessee.

Are *New* Buildings Obsolete?



New buildings face almost immediate obsolescence if they lack all the modern conveniences demanded by tenants.

A new building without an attractive Prometheus Electric Heater in *every* room will soon become obsolete.

PROMETHEUS

Electric Heater

is built into the wall, out of the way. Has attractive grille in chrome plate or Monel metal. Nothing to crack or chip. Supplied also in vitreous porcelain if preferred.

Heating element completely enclosed. No danger of accidental burns. Easily installed. Backed by 30 years' experience.

Write for catalog.

PROMETHEUS ELECTRIC CO.
12 NINTH AVENUE NEW YORK, N. Y.

STEEL ARCHES

Spans Up to and Exceeding 400 Feet

For Sports Buildings, Theatres, Rinks, Hangars, Auditoriums, Indoor Tennis, Football Arenas, etc.

We furnished and erected our arches shown below for the Lake Placid Arena for use
III OLYMPIC WINTER GAMES
LAKE PLACID, N. Y.
FEB. 4th-13th, 1932

Lake Placid Arena, ground broken August 20, 1931, completed January 16, 1932

OUR CATALOGUE IS FILED IN SWEET'S

We specialize in the design, construction and erection of patented steel arches, scientifically designed. Heights to suit. Consultation service and estimates gladly furnished.

ARCH ROOF CONSTRUCTION CO., Inc.
Engineers—Contractors
104 WEST 42nd STREET NEW YORK, N. Y.

In the erection of the building, the department served as its own general contractor, executing several units of construction with its own forces and dealing directly with the various subcontractors.

COST

The distribution of the construction cost of the completed building is given in the accompanying table. The annual interest and redemption on the capital outlay, including all accessories, based on an amortization in six years, will amount to $9,358.50; the estimated maintenance and operating costs on the building will bring the total yearly expenditure during the period to $13,458.50.

CAPITAL EXPENDITURE

Preliminary and general expense	$ 671.80
Clearing site	*125.01
Excavation	960.00
Concrete footings	465.00
Concrete walls and partitions in basement	1,818.00
Reinforced concrete floors, first floor	310.00
Concrete floors in basement and gutter around building	1,224.00
Concrete entrance	398.00
Structural steel	5,237.50
Plumbing	1,780.31
Heating	3,019.40
Stack	396.00
Joists, floor and roof	1,726.67
Deck, floor and roof	2,687.38
Gypsum floors	1,275.02
Roof covering	900.00
Aluminum, outside	6,320.63
Aluminum, inside	3,125.00
Aluminum doors	870.75
Kalamein doors	99.70
Glazing doors	28.00
Steel window frames	1,429.30
Glazing windows	570.00
Insulation	1,063.75
Painting	237.00
Water, gas, sewer and electric connections	282.25
Electric conduit material	2,775.56
Electric wiring	450.54
Electric fixtures	598.58
Plastering	1,094.63
Sand blasting	275.00
Window washing	60.00
Fire escape	375.00
TOTAL	$42,399.76

*Credit.

Cost of accessories not included in capital expenditure: gypsum partitions, including doors, 16¢ per square foot each surface; floor covering, 14.8¢ per square foot; aluminum partitions—(1) full-height, 32.5¢ per square foot each surface, and (2) 7-foot movable, $6.53 per lineal foot or 41.5¢ per square foot each surface; window shades on first and second floors and one side of basement, $180.00.

The building cubes 222,244 cubic feet. Cost per cubic foot, without accessories, 19.1¢; cost per cubic foot, including all accessories, 22¢.